FINAL Environmental Assessment

for the

Proposed Clipper Windpower, Inc. Low Wind Speed Turbine Demonstration Project, Carbon County, Wyoming

January 2005



U.S. Department of Energy/National Renewable Energy Laboratory 1617 Cole Boulevard Golden, Colorado

FINAL

ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED CLIPPER WINDPOWER, INC. LOW WIND SPEED TURBINE DEMONSTRATION PROJECT, CARBON COUNTY, WYOMING

Prepared for

U.S. Department of Energy National Renewable Energy Laboratory Golden, Colorado

By

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EXECUTIVE SUMMARY

Clipper Windpower, Inc. (Clipper), in partnership with the U.S. Department of Energy (DOE) and the National Renewable Research Laboratory (NREL), has developed a proprietary low wind speed turbine design that is capable of producing more electricity in low wind speed conditions than comparable wind turbines. The Clipper turbine would have a maximum output of 2.5 megawatts of electrical power and has undergone numerous tests, including dynamometer testing at the National Wind Technology Center (NWTC) for at least 6 months. At this point, Clipper needs to test the prototype wind turbine under field conditions before the design can be put into full production. In order to test the low wind speed turbine, Clipper proposes to construct/install and operate the low wind speed turbine demonstration project on privately owned land near Medicine Bow, Wyoming.

The proposed project would be located approximately 5 mi southwest of the community of Medicine Bow, Wyoming, in eastern Carbon County. Access to the site is south from Medicine Bow, Wyoming, via the Elk Mountain to Medicine Bow Road (an unpaved public road). The proposed project would be located in Section 1, T21N, R79W. In addition, the proposed project would be located approximately 850 ft south of a small existing wind farm that consists of 10 existing wind turbines (i.e., the Medicine Bow Wind Project). This small wind farm is owned and operated by the Platte River Power Authority (PRPA). However, the proposed project would not be part of PRPA's Medicine Bow Wind Farm but would be located near that facility so that it could utilize as much of the existing infrastructure (i.e., roads and powerlines) as possible. By co-locating the project area the Medicine Bow Wind Farm, Clipper would minimize additional disturbance and associated impacts.

The Proposed Action would include the construction/installation of a single wind turbine, a single meteorological tower, a small service building, and buried powerlines and cables and would result in less than 10 acres of new short- and long-term disturbance. Clipper anticipates that the equipment would last approximately 20 years, after which time the wind turbine would be decommissioned and all the equipment removed. The Proposed Action would comply with all relevant federal, state, and local laws and regulations.

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To minimize potential environmental impacts associated with the Proposed Action, Clipper would undertake various applicant-committed measures including seasonal restrictions on operations in crucial winter range for pronghorn and restrictions in the spring for operations near greater sage-grouse leks. Clipper would also implement storm water pollution prevention measures to minimize impacts to vegetation, soils, and surface water resources. Clipper would also monitor potential impacts to avian and bat species by conducting mortality surveys near the wind turbine and meteorological tower during the first 12 months of operation of the Proposed Action and would paint the small service building a desert tan to blend into its surroundings. Once construction operations have been completed and after the site have been decommissioned, Clipper would implement prompt revegetation operations and return the area to disturbance conditions. Detailed information concerning all applicant-committed practices is presented in Chapter 2 of this Environmental Assessment (EA).

This EA analyzes the potential environmental impacts of the DOE decision to fund the Proposed Action. In accordance with applicable regulations and policies, the DOE conducted internal and external scoping of the Proposed Action. This process determined the scope and the specific critical elements of the human environment to be addressed in this EA. Federal, state, and local government agencies were also contacted to identify potential issues and concerns.

In addition to the Proposed Action, the EA also analyzes the No Action Alternative in detail. Other alternatives were evaluated prior to scoping by Clipper; they either would not meet the needs of Clipper or would obviously result in more disturbance and environmental impacts than the Proposed Action. These alternatives are discussed in the EA but were not analyzed in detail.

Based on public scoping, internal DOE review of the Proposed Action, and additional existing information concerning the proposed project area, DOE has determined that this EA would analyze the potential impacts of the Proposed Action and No Action Alternative on surface water resources (including wetlands); wildlife; vegetation; soils; threatened, endangered, proposed, and candidate species; cultural resources; noise; and visual resources. Numerous other

environmental resources were determined not to be affected by the project or were not present within the general project area and are not discussed in detail in this EA.

The project site is located immediately adjacent to the exiting Medicine Bow Wind Farm, and this area has been utilized for wind development since the 1980s. With Clipper's commitment to implement storm water pollution prevention measures and to promptly conduct reclamation operations, it was determined that the Proposed Action would have negligible short- and longterm impacts on soils, vegetation, and surface water resources (including wetlands). The project area was also surveyed for cultural resources and none were identified; the Proposed Action would have no impacts on historic or prehistoric sites. DOE/NREL has also notified Native American tribes in accordance with federal policy. To date, no sites or areas of traditional cultural importance have been identified within or near the project area. The Proposed Action would also have negligible impacts on noise and visual resources. The Proposed Action would not adversely affect any threatened, endangered, proposed, or candidate species that may occur or traverse through the project area. The Proposed Action (specifically the presence of the meteorological tower and operation of the wind turbine) would likely result in the mortality of 6.7 bats per year, 0.15 raptors per year and, 15.4 passerine birds per year. However, these mortalities would not have an adverse impact on bat, raptor, or passerine bird populations. Clipper would monitor mortalities around the meteorological tower and wind turbine for a 12month period and would report the results to U.S. Fish and Wildlife Service, DOE/NREL, and Wyoming Game and Fish Department. The Proposed Action would have negligible impacts on other species that may occur in the project area.

The Proposed Action would result in less than 10 acres of disturbance (8.45 acres of temporary disturbance and 1.25 acres of life-of-project disturbance) but would likely cause negligible cumulative impacts because of the limited amount of area that would be affected and the location of the project near the existing Medicine Bow Wind Farm.

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LIST OF ABBREVIATIONS AND ACRONYMS

| BLM | Bureau of Land Management |
|----------|--|
| CEQ | Council on Environmental Quality |
| C.F.R. | Code of Federal Regulations |
| Clipper | Clipper Windpower, Inc. |
| dBA | A-weighted decibels |
| DOE | Department of Energy |
| EA | Environmental assessment |
| MW | Megawatt(s) |
| NEPA | National Environmental Policy Act of 1969 |
| NREL | National Renewable Energy Laboratory |
| NRHP | National Register of Historic Places |
| PRPA | Platte River Power Authority |
| RCRA | Resource Conservation and Recovery Act |
| TEP&C | Threatened, Endangered, Proposed, and Candidate Species |
| U.S.C. | United States Code |
| USFWS | United States Fish and Wildlife Service |
| WAPA | Western Area Power Administration |
| WDEQ/WQD | Wyoming Department of Environmental Quality/Water Quality Division |
| WGFD | Wyoming Game and Fish Department |
| WNDD | Wyoming Natural Diversity Database |
| WSHPO | Wyoming State Historic Preservation Office |
| | |

1.0 INTRODUCTION

1.1 BACKGROUND

Wind resources in the U.S. are vast. However, less than 1% of the nation's energy needs are currently being provided by renewable wind power. As the U.S. looks to find ways to generate more electricity from wind resources, wind developers are challenged to improve the efficiency of future wind turbines so that more electricity can be produced economically in low wind speed areas--areas where the average annual wind speed is at least 13-14 mph at a height of 33 ft. Currently, most large wind turbines are designed for optimal performance in areas where the average wind speed is at least 15 mph at a height of 33 ft. However, many large population centers and power grids in the U.S. are located in low-wind speed-areas. If low wind speed areas could be used effectively for large-scale power generation, electric transmission losses and costs would be greatly reduced and the total area available for wind project development in the U.S. would be increased twenty-fold (National Renewable Energy Laboratory [NREL] 2002). As a result, government and private researchers are working to develop wind turbines that operate more economically at lower wind speeds that can be integrated into many U.S. power grids.

The NREL is a national laboratory for the U.S. Department of Energy (DOE) and is the nation's premier laboratory for renewable energy research and development. NREL works with the wind energy industry and provides funding for research and development for state-of-the-art wind turbine designs to advance wind power technologies that lower the cost of wind energy.

Clipper Windpower, Inc. (Clipper) has developed a proprietary low-speed wind turbine design that is capable of producing more electricity in low-wind conditions than comparable wind turbines. The Clipper turbine would have a maximum output of 2.5 megawatts (MW) of electrical power. Clipper has designed and constructed a full-scale version of the low-speed wind turbine and has begun the process of obtaining international certification for the low-speed wind turbine model. The National Wind Technology Center (operated by the NREL) administers the wind turbine certification program. Certification is provided by several international organizations including Underwriters' Laboratories in the U.S. and Germanisher Lloyd in Europe. Although the wind turbine certification program is not a warranty, the certification provides purchasers of wind turbines assurance that a particular wind turbine model has been through the following:

- tested and evaluated by an accredited certification test organization,
- examined by a registered certification agent to ensure compliance with internationally approved standards for identification and labeling, power performance, structural integrity, acoustic emissions, loads, power quality, safety, and other characteristics, and
- demonstrated to have safe operating characteristics, including control systems that reflect sound engineering practice.

Wind turbine model certification is a major step in providing electric service organizations, government agencies, businesses, and private individuals that plan to purchase a wind installation with assurances that wind turbine models have been tested and meet certain design, manufacturing, performance, and safety standards. The Clipper low wind speed turbine design has undergone numerous tests, including drive train testing in the National Wind Test Center dynamometer. At this point, Clipper needs to test the demonstration wind turbine under natural wind conditions before the design can obtain international certification and can be put into full production. In order to test the low-speed wind turbine, Clipper proposes to install/construct and operate the low-speed wind turbine demonstration project on privately owned land near Medicine Bow, Wyoming (refer to Figure 1.1). The DOE/NREL, through a cost-shared research and development subcontract, proposes to provide partial funding for this project throughout the 3-year performance test period.

This environmental assessment (EA) is being prepared under the *National Environmental Policy Act of 1969* (NEPA), as amended (42 *United States Code* [U.S.C.] 4321 et seq.), and its implementing regulations found in 40 *Code of Federal Regulations* (C.F.R.) Part 1500–1508, and DOE's implementing regulations contained in 10 C.F.R. 1021.330 et seq. This EA assesses

This figure is a separate file Fig 1-1.pdf.

Figure 1.1 Location of Project Area.

the environmental impacts of the Proposed Action and the No Action Alternative, and serves to guide the decision-making process.

Seven critical elements (clearing or excavation [i.e., vegetation and soils], new or modified federal/state permits, threatened and endangered species, archaeological/cultural resources, other protected species, noise, and aesthetics) are present in the proposed project area, may be affected by the Proposed Action, and are discussed in detail in this EA. DOE has determined that 29 of the 36 critical elements of the human environment are not present in the area or are not affected by the Proposed Action and are not discussed further in this EA.

Based on an internal DOE review of the Proposed Action and additional existing information concerning the proposed project area, DOE has determined that this EA would also analyze potential impacts of the Proposed Action and alternatives on surface water resources and wildlife. Air quality, water quality (groundwater), livestock grazing, and wastes (hazardous or solid) were determined to be present in the proposed project area, but they would not be affected by the Proposed Action and would not be discussed further in this EA. Other resources (e.g., geology, health and safety, socioeconomics, noxious weeds, water rights, wild horses, landownership, timber, mineral resources, environmental justice, wilderness areas, etc.) have been determined not to be affected by the proposed project and are therefore not analyzed in detail in this EA.

Based on the discussion presented above and in accordance with DOE NEPA regulations and policies, the following resource issues/topics will be addressed in this EA: cultural resources, noise, soil resources, threaten, endangered, proposed, and candidate species, vegetation, aesthetic/visual resources, water resources (surface water including wetlands), and wildlife resources.

1.2 PURPOSE AND NEED

DOE/NREL's purpose is to fund the installation/construction and operation of a single low-speed wind turbine and associated facilities. The project would collect electrical production and reliability data from the wind turbine and wind data that would be necessary to evaluate the economic and technical feasibility of the demonstration wind turbine and its design. In addition, Clipper would also utilize a new design for the concrete pad for the wind turbine and would monitor performance of the pad.

This project is important to DOE/NREL because previous wind turbine design studies indicate that several new design configurations offer significant opportunities for reducing costs over current wind turbine configurations. Three major elements factor into opportunities for reducing the cost of wind energy. First, reduction in the cost of and improvements in the efficiency of wind turbine components including the drive train; second, increases in energy capture by taking advantage of higher wind speeds due to wind shear by placing turbines on innovative tall towers; third, increases in energy capture by increasing rotor diameter and taking advantage of innovative rotor configurations. These studies have indicated that several techniques can be used to achieve these results. Many of these techniques are interrelated, such as decreasing drive train weight that makes use of taller towers more cost effective, or introduction of novel rotor designs that decrease loads and allow larger rotor diameters. Application of emerging controls strategies, coupled with increased instrumentation, promises to aid in the cost-effective integration of these major elements.

Clipper has proposed a new turbine design that attempts to take into account all three of these elements. This new turbine design will use a novel gearbox with multiple generators. This new design is expected to be significantly lighter and less costly and allow use of taller towers to take advantage of wind shear at higher altitudes. The proposed Clipper turbine, if successful, is expected to be a major step toward realizing the advantages of low wind speed technology.

Many barriers impede the rapid advancement of wind turbine technologies, warranting cooperative development efforts between the federal government and the private sector. As a result, DOE/NREL has implemented financial programs that encourage partnerships with members of the U.S. wind industry, with the ultimate goal of developing large wind turbine systems capable of producing electricity for 3.0 ¢/kilowatt hour in Class 4 wind areas by 2007. A portion of the cost of Clipper's current low wind speed turbine demonstration project is being provided through one of DOE/NREL's partnership programs. In October 2002, Clipper won (through competitive bidding process) approximately \$13 million for the partial funding of the development of new low wind speed turbine technologies being tested and evaluated under the Proposed Action.

1.3 ENVIRONMENTAL REVIEW PROCESS

1.3.1 National Environmental Policy Act and this NEPA Document

The DOE is the federal lead agency for evaluating the project under NEPA, and the DOE must determine whether to provide funding for the proposed project. As required by NEPA, this EA examines the expected individual and cumulative impacts of the proposed project. The DOE is the only federal agency with responsibility for approving or denying the partial funding for the project and therefore is the lead agency in preparing this EA.

The DOE/NREL prepared this EA to provide the public and responsible agencies with information about the project and its potential effects on the local and regional environment. This EA was prepared in compliance with NEPA requirements.

NEPA, as amended (42 U.S.C. 4321 et seq.), the President's Council on Environmental Quality (CEQ) regulations for implementing the procedural provision of NEPA (40 C.F.R. 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 C.F.R. 1021) require that DOE, as a federal agency:

• assess the environmental impacts of any Proposed Action,

- identify any adverse environmental effects that cannot be avoided, should the Proposed Action be implemented,
- evaluate alternatives to the Proposed Action, including a No Action Alternative,
- describe the relationship between the local short-term use of the environment and the maintenance and enhancement of long-term productivity, and
- characterize any irreversible and irretrievable commitments of resources that would be involved should the Proposed Action be implemented.

These provisions must be addressed before the final decision is made to proceed with any proposed federal action that has the potential to cause impacts to the human environment, including providing federal funding to a project. This EA evaluated the potential individual and cumulative effects of the Proposed Action and the No Action Alternative on the physical, human, and natural environment. The EA is intended to (1) meet DOE's regulatory requirements under NEPA and (2) provide DOE with the information needed to make an informed decision in connection with the proposed project.

Existing NEPA documents that may be related to the proposed project include the following:

- EA, wind energy, Wyoming (Bureau of Reclamation 1979),
- environmental survey report, wind energy project, Medicine Bow, Wyoming (Platte River Power Authority 2000),
- environmental impact statement for the Carbon Basin coal project (Bureau of Land Management [BLM] 1999), and
- environmental impact statement for the Kenetech/PacifiCorp windpower project (BLM 1995).

1.3.2 Scoping and Public Involvement

A public scoping notice was mailed to approximately 52 federal, state, and local government agencies, companies, individuals, and organizations, giving them until November 10, 2004 (14 days), to submit comments. Five comment letters were received by the DOE. All five letters

were from government agencies--none were from private corporations or non-government organizations. Copies of the public scoping letters are presented in Appendix A.

Issues raised by government organizations and the public include the following:

- potential impacts to threatened, endangered, proposed, and candidate (TEP&C) species (e.g., black-footed ferret, bald eagle, Ute ladies'-tresses);
- potential impacts to raptors, migratory birds, greater sage-grouse, crucial winter range for pronghorn antelope, white-tailed prairie dogs, other mammals, and wetlands;
- alternatives to the Proposed Action and cumulative impacts;
- livestock grazing on state and federal leases;
- construction procedures; and
- reclamation and stabilization procedures.

This EA presents DOE/NREL's analysis of the Proposed Action and No Action Alternative and findings of the potential environmental effects of the Proposed Action. The EA is being distributed for public review to interested members of the public, Tribal organizations, and federal, state, and local agencies, and for review and comment prior to any final decision by DOE on the proposed project.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

2.1.1 Overview

The Proposed Action would be located on privately owned lands in portions of Section 1, T21N, R79W, and Section 36, T22N, R79W (refer to Figure 1.1) and would involve the construction of a single 262-ft tall tubular tower and wind turbine, a 240-ft tall meteorological tower, a 400-ft² service building, and approximately 4,300 ft of underground powerline (refer to Figure 2.1). Associated cables and powerlines would be buried between the proposed meteorological tower, the wind turbine, and the service building. In addition, approximately 1,000 ft of 10-ft wide service road would be constructed to provide access to the facilities (refer to Figure 2.1).

The proposed project would be located approximately 850 ft south of seven existing wind turbines (i.e., the Medicine Bow Wind Project) owned and operated by the Platte River Power Authority (PRPA). The proposed project would not be part of PRPA's Medicine Bow Wind Project but would be located near that facility so that it could utilize as much of the existing infrastructure (i.e., roads and powerlines) as possible. This would minimize additional disturbance and associated impacts. The Proposed Action would likely result in less than 10 acres of new disturbance (refer to Table 2.1).

Access to the site would be south from Medicine Bow, Wyoming, via the Elk Mountain to Medicine Bow road (an unpaved county road) to a series of unpaved private access roads located near the existing Medicine Bow Wind Project (refer to Figure 2.2).

Clipper anticipates that the equipment would last approximately 20 years, after which time the wind turbine would be decommissioned and all the equipment removed. The Proposed Action would comply with all relevant federal, state, and local laws and regulations.

This figure is a separate file Fig 2-1.pdf.

Figure 2.1 Layout of Medicine Bow Low Wind Speed Turbine Facilities.

This figure is a separate file Fig 2-2.pdf.

Figure 2.2 Location of Existing Development near the Project Area.

| Component | Temporary Disturbance | Life-of-Project Disturbance | Total Disturbance |
|---|--------------------------|--------------------------------|----------------------|
| Access road | 1.00 | 0.50 | 1.50 |
| Wind turbine | 3.75 | 0.25 | 4.00 |
| Meteorological tower and service building | 3.50 | 0.50 | 4.00 |
| Underground powerline | 0.20 | 0.00 | 0.20 |
| Total | 8.45 | 1.25 | 9.70 |
| | | | |

Table 2.1Proposed Project New Disturbance¹.

¹ In acres.

2.1.2 Construction and Installation Phase

The construction and installation phase of the Proposed Action would begin as soon as all required authorizations are obtained from DOE and any related state or local regulatory agencies. Locations of the various components (e.g., roads, wind turbine, meteorological tower, service building, buried cables) would be surveyed and staked. The existing access road from the southern portion of Section 36, T22N, R79W, would be extended approximately 200 ft to the proposed wind turbine site and would provide access to the wind turbine. An additional 800 ft of access road would be constructed between the meteorological tower and the service building (refer to Figure 2.1). The proposed access road would be approximately 10 ft wide and would likely result in 0.5 acre of life-of-project disturbance. There would also be an additional 1.0 acre of temporary disturbance created by the construction of the access route. The road would be surfaced with locally available gravel or crushed stone to provide year-round access to the project site.

The wind turbine would be anchor-bolted to a concrete foundation consisting of an octagonshaped pad that would have a diameter of 53 ft and approximately 4 ft thick. The turbine erection site would likely require approximately 0.25 acre of life-of-project disturbance. The pad would be excavated with a backhoe, and the excess material would be transported off-site for disposal. The concrete forms would be placed into the excavation, and concrete poured. The 262-ft tall turbine tower would be transported in pieces and assembled on-site. The turbine tower, turbine nacelle, and 148-ft long blades would be painted white and would match the color of the existing wind turbines. A large crane would be transported to the site and used to erect the tower and to lift the turbine, hub, and rotor blades into place. The self-supporting tower would not require any guy wires or other support system (refer to Figure 2.3). There would be an additional 3.75 acres of temporary disturbance created by construction/installation of the wind turbine.

The 240-ft tall meteorological tower (with three sets of guy wires) and 400-ft² service building would be transported to the site and erected and would comply with manufacturer installation recommendations. The meteorological tower is a standard lattice-design and would be placed on a small concrete pad and supported with guy wires. The 400-ft² service building would be a 10-ft tall metal building that would be placed on a concrete slab (refer to Figure 2.1). The service building would be painted desert tan color to blend into the surrounding environment. Electrical power and communication service would be available in the service building. Construction of both the meteorological tower and service building would likely result in approximately 0.5 acre of life-of-project disturbance and an additional 3.5 acres of temporary disturbance.

Portable self-contained chemical toilet(s) would be provided for human waste disposal during the construction, operations, and decommissioning phases of the Proposed Action. Bottled drinking water would be provided during the construction and operations phase of the Proposed Action. All solid waste (i.e., trash) and waste materials generated during the construction, operations, and decommissioning phases of the Proposed Action would be collected in portable dumpsters or trash containers and would be transported off-site to an authorized solid waste disposal facility. Clipper does not anticipate that any flammable waste materials or hazardous waste would be generated as a result of the Proposed Action; however, Clipper and its contractors would comply with all applicable federal and state laws and regulations governing the handling and disposal of any flammable or hazardous waste. No solid or liquid wastes would be disposed within the project area.

This figure is a separate file Fig 2-3.pdf.

Figure 2.3 Low Wind Speed Turbine.

Approximately 4,300 ft of 34.5-kV underground powerline would be installed from the proposed wind turbine to a terminal riser pole owned by the Western Area Power Administration (WAPA) (refer to Figure 2.4). The terminal riser pole is the connection point to the power grid and is located approximately 300 ft northeast of the existing Medicine Bow Wind Project. Approximately 400 ft of buried powerline would be installed between the terminal riser pole and PRPA's electric substation. This would result in approximately 0.1 acre of temporary disturbance. Approximately 3,700 ft of underground powerline would be buried in the center of the existing access road using conventional trenching techniques. This actually would result in no new disturbance. The remaining 200-ft of underground powerline would be buried across undisturbed ground (using the same installation technique) and would result in a minimal amount of temporary disturbance (less than 0.1 acre). Additionally, 1,300 ft of communication and power cables would be buried among the meteorological tower, turbine, and service building along the side of the new access road and would not result in any additional disturbance. Under the Proposed Action, no aboveground powerlines or cables would be constructed or installed.

The construction/installation phase of the Proposed Action would require approximately 10-15 people, and typical construction equipment (e.g., backhoe, crane, pickup, dump truck, cable plow, etc.) and would require approximately 2 months to complete starting in December 2004. Off-road travel within the project area would be limited to area between the proposed wind turbine, meteorological tower, and service building. Total disturbance associated with the Proposed Action (including off-road travel) would result in less than 10 acres of new disturbance.

Clipper would apply to the Wyoming Department of Environmental Quality, Water Quality Division (WDEQ/WQD) for permit coverage for potential storm water pollution (i.e., erosion from construction activities). In addition, Clipper would prepare and implement a storm water pollution prevention plan to prevent disturbed runoff from leaving the project site.

This figure is a separate file Fig 2-4.pdf.

Figure 2.4 Location of Underground Powerline.

2.1.3 Operations Phase

Once the construction and installation phase is complete, Clipper would begin the operations phase of the Proposed Action. During this phase, wind energy would be converted into rotational energy and then into electricity through the use of generators located in the wind turbine nacelle. The wind turbine would be computer-controlled for maximum performance and for safety when wind speeds exceed design parameters. Typically, the wind turbine would start spinning at approximately 9 mph (i.e., the "cut-in speed"), and the typical shut-down speed would be between 55 and 63 mph (i.e., "cut-out speed"). The wind turbine would have a blade sweep area of 73,093 ft², a nominal rotor speed of 9.6 to 15.5 revolutions per minute, and a blade tip speed of 167 mph at optimal operating speed. The wind turbine system would be designed to stand hurricane-force winds.

During the first 9-12 months of operations, the site would be manned by a technician on 24-hr per day/7-day per week basis. After the initial start-up period, a technician would typically visit the site once per week. Other than regularly scheduled maintenance (e.g., gearbox inspection, oil and oil filter replacement, etc.), the wind turbine would require little routine maintenance. Utility company technical staff would integrate electricity generated by the wind turbine into the power grid.

One of the primary purposes of the Proposed Action would be the collection and analysis of various power generation and reliability data from the demonstration wind turbine and wind data. Data collection would be automated and would utilize a local area network-based web caching data collection system. The data would be collected and transmitted in real-time to Clipper personnel at their corporate offices in Carpinteria, California, where the data would be analyzed.

2.1.4 Decommissioning Phase

Clipper expects the operating life of the wind turbine and associated equipment to be approximately 20 years. At the end of the useful operating life, the turbine, tubular tower, meteorological tower, and service building would be removed and recycled as appropriate. Those materials that are not recyclable would be disposed of at an authorized solid waste landfill facility. All used lubricating fluids would be non-hazardous and would be recycled or disposed in accordance with state regulations. The concrete pads and buried cables and powerlines would be recycled or disposed at an authorized solid waste landfill facility.

Once the equipment has been removed from the site, all disturbed and/or compacted areas (i.e., areas with roads, pads, and buried cables) not needed for on-going operations or desired to be left in-place by the private landowner would be reclaimed and revegetated. Disturbed areas would be recontoured and disced to prepare a suitable seedbed and, at the seasonally appropriate time, the area would be seeded and mulched as directed by the private landowner. The specific seed mixture would be determined by the private landowner and would likely contain grasses, forbs, and shrubs, and the reclaimed areas would be mulched.

It is possible that, at the end of the 20-year life of the project, the proposed wind turbine site might not be decommissioned. Rather than be decommissioned, the site may be equipped with a new or different wind turbine (i.e., repowered). If the site is repowered, it would continue to operate and generate electricity. However, at this time Clipper does not anticipate repowering the site, and the Proposed Action is limited to a 20-year life. Repowering of the project site may require further environmental review and analysis, and for the purpose of this project the repowering situation is outside the scope of this EA and is not addressed in this EA. Additional environmental review and analysis may be conducted if a decision was made to repower the site.

2.1.5 Applicant-committed Practices

Clipper proposes to implement the following applicant-committed measures and procedures to minimize or avoid potential environmental impacts. These measures would be applied on all lands affected by the project.

2.1.5.1 Air Quality

• Clipper would not burn garbage or refuse at the site or other facilities.

2.1.5.2 Soils and Vegetation

- To minimize impacts to soil and vegetation resources, Clipper would reduce the area of disturbance to the absolute minimum necessary for construction operations while providing for safe operating conditions. Clipper would also restrict off-road vehicle traffic where it is not necessary for construction of the Proposed Action.
- Where feasible, buried powerlines and cables would be located in common corridors to avoid creating separate areas of disturbance.
- Upon completion of construction/installation phase and decommissioning phase of the Proposed Action, Clipper would restore topography to near pre-existing contours on the project site, including access roads and other facilities. Clipper would also revegetate all disturbed areas not required for on-going operations. Clipper would apply fertilizer as required, would seed, and would apply mulch to all disturbed areas. The landowner would determine the species to be seeded and the quantity of fertilizer and mulch to be used during vegetation operations.

- Any materials used during reclamation activities (e.g., seed, mulch) would be certified free of noxious weed seed and reproductive plant parts as determined by appropriate county or state officials.
- Clipper would implement noxious weed control measures within the area disturbed by construction activities. Noxious weed control measures would include chemical or mechanical treatment to contain or eradicate any new noxious weed populations that develop in disturbances created by construction activities. Prompt reclamation of disturbed sites would also minimize potential for weed infestations.
- Clipper would obtain permit coverage for storm water pollution from construction sites from the Wyoming Department of Environmental Quality/Water Quality Division. Clipper would also develop a storm water pollution prevention plan that would include measures (such as interception ditches, sediment traps, water bars, and silt fences) to minimize storm water pollution.

2.1.5.3 Wildlife (Including Special Status Species)

- To minimize potential impacts to all wildlife species, Clipper would prohibit all unnecessary off-site activities by project personnel. Clipper would inform all project personnel of applicable wildlife laws and penalties associated with unlawful taking or harassment of wildlife.
- To minimize potential impacts to raptors and avian species, Clipper would ensure that all project-related powerline structures would be constructed in accordance with *Suggested Practices for Raptor Protection on Powerline: The State of the Art in 1994* (Avian Power Line Interaction Committee 1996).

- To minimize potential impacts to active greater sage-grouse leks during the construction of the Proposed Action, Clipper would not conduct any surface-disturbing activities within 0.25 mi of any active lek during the greater sage-grouse mating season between February 1 and May 15. In addition, in order to minimize potential impacts to nesting greater sage-grouse, no surface-disturbing activities would be conducted within 2 mi of any active lek between April 1 and July 1 without permission from the Wyoming Game and Fish Department (WGFD). Reclamation activities would be conducted prior to April 1, unless prior permission is obtained from WGFD.
- To minimize potential impacts to pronghorn, construction activities would be limited during severe winter conditions. Specifically, Clipper would maintain contact with local WGFD personnel, and if it is determined by WGFD that severe winter conditions exist, Clipper would notify DOE/NREL of any restrictions required by WGFD and would limit the number of construction vehicles that would be allowed to access the site. In addition, Clipper would minimize the amount of time personnel would be at the construction site. Reclamation and revegetation procedures would be followed to minimize the long-term loss of habitat.
- To document potential impacts to avian and bat species, Clipper would conduct mortality surveys near the wind turbine and meteorological tower during the first 12 months of operation of the Proposed Action. Clipper would utilize mortality survey methods similar to those developed for the nearby Foote Creek Rim Wind Plant (Young et al. 2003). Personnel would conduct one survey every 2 weeks, and each survey would involve walking transects established within 250 ft of each tower. Search transects would be set approximately 25-30 ft apart and the searcher would walk at a rate of approximately 2 mi/hr along the transect searching both sides out approximately 12-15 ft for casualties. It is estimated that it should require 0.75 hour to survey both towers. For each casualty identified,

data recorded would include species, sex, and age when possible, date, and time collected, location, condition, and any comments that may indicate the time and cause of death. All carcasses located would be photographed as found and mapped. If the species information cannot be determined, the carcass would be bagged and transported to local biologists for proper identification. At the end of the 12-month survey period, the data would be compiled, summarized, and submitted to the DOE, USFWS, and WGFD. The U.S. Fish and Wildlife Service (USFWS) would be notified immediately by telephone if carcasses of raptors or other species of concern were located at any time during turbine operation.

2.1.5.4 Noise

• Clipper would ensure that muffles and motorized equipment are maintained according to manufacturers' specifications.

2.1.5.5 Cultural Resources

- Clipper would inform all construction personnel that they are working on private property and not to search for or remove any cultural resource materials.
- If any cultural resources are discovered during construction operations, all construction activities within the immediate area being conducted by Clipper would be suspended and DOE and Wyoming State Historic Preservation Office (WSHPO) personnel and appropriate tribal representatives would be immediately notified. The materials would be evaluated by the archaeologist or historian meeting the Secretary of Interior's Professional Qualification Standards (48 FR 22716, September 1983). Work in the area would not resume until the status of the find is determined and any appropriate mitigation plans (if necessary) are developed and implemented.

- If a cultural resource site, considered eligible for the National Register of Historic Places (NRHP) is identified, Clipper would utilize avoidance as the preferred method of minimizing potential adverse effects to the property.
- Clipper would minimize adverse effects to cultural/historical properties that cannot be avoided by the preparation and implementation of a cultural resources mitigation plan approved by the WSHPO and DOE /NREL.

2.1.5.6 Health and Safety

- Clipper would provide potable drinking water and portable self-contained toilets for human waste disposal. All sewage and refuge (i.e., trash) generated on-site would be collected and routinely transported off-site to a Department of Environmental Quality-approved waste disposal facility.
- Clipper plans to avoid the creation of hazardous wastes as defined by *Resource Conservation and Recovery Act* (RCRA) wherever possible. Clipper would ensure that any hazardous waste, as defined by RCRA, that is generated by Clipper would be transported and/or disposed of in accordance with all applicable federal, state, and local regulations.

2.1.5.7 Aesthetics

• The service building would be painted a desert tan color to blend into the surrounding.

2.2 NO ACTION ALTERNATIVE

The No Action Alternative is required under Section 1502.14(d) of NEPA and DOE implementing regulations. A No Action Alternative is considered in this EA and provides a

benchmark, enabling decision-makers to compare the magnitude of environmental effects of the alternatives (including the Proposed Action). Under the No Action Alternative, the DOE would not fund the proposed project. To create the basis for a meaningful analysis, it is assumed that the low wind speed turbine demonstration project would not be constructed at the proposed location. However, it is possible that Clipper could construct the project using other funds independent of DOE.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

In accordance with CEQ and DOE NEPA regulations, several alternatives to the proposed project were identified and considered but eliminated by Clipper from detailed study in this EA. One of the alternative sites was eliminated (i.e., screened out) because of scheduling conflicts. In addition, some of the potential sites were eliminated from detailed study because they would clearly result in more environmental impacts than the Proposed Action. The following alternatives were identified and considered but eliminated from detailed study.

2.3.1 Locate the Proposed Project at a Site in Southern California

Under this alternative, Clipper would construct and operate the low-speed wind turbine demonstration project at a site located near Birds Landing in southern Solano County in northern California. This site would be part of the repowering effort in a portion of an existing wind farm. Recent information submitted to the Solano County Board of Supervisors for this location indicates that incidents of bird strikes on wind turbines were much higher than originally expected. As a result, the Solano County Board of Supervisors is reviewing current information and has delayed its decision to permit and allow the repowering of this site (including a possible site for the Clipper's low wind speed turbine). As a result, this site would not be available for use for the immediate future (personal communication, October 18, 2004, with Mr. Tom Feiler, Clipper, Boulder, Colorado). The permitting delay would not meet the scheduling needs of Clipper or DOE and could potentially have more impacts to avian species than under the

Proposed Action. Therefore, this alternative was determined not to meet the schedule required for this project, was eliminated from further consideration, and is not studied in detail in this EA.

2.3.2 Locate the Proposed Project at a Site in Jackson County, Minnesota

Under this alternative, Clipper would construct and operate the low wind speed turbine demonstration project at a site located in Jackson County in southwestern Minnesota. At this site, the proposed low-speed wind turbine demonstration project would be the only wind turbine in the immediate area (i.e., it would not be part of an existing wind farm). At the Jackson County alternative site, the low-speed wind turbine demonstration project would be located in an area that does not currently have any wind farms. As a result, the proposed wind turbine would be noticeable to the casual observer when compared to the Proposed Action. In addition, this alternative would likely result in more disturbance than under the Proposed Action (personal communication, October 18, 2004, with Mr. Tom Feiler, Clipper, Boulder, Colorado).

This alternative would result in increased aesthetic impacts and visual intrusions into the viewshed of the project area and would result in increased disturbance compared to the Proposed Action. Therefore, this alternative was determined not to be environmentally sound when compared to the Proposed Action, was eliminated from further consideration, and is not studied in detail in this EA.

2.3.3 Locate the Proposed Project at a Site 0.5 mi South of the Proposed Project Location

Under this alternative, Clipper would construct and operate the low-speed wind turbine at a site located approximately 0.5 mi south of the proposed construction site. The alternative site would be located in an area that would be similar in all environmental aspects to the site of the Proposed Action. The primary disadvantage of the alternative site is that it would be located farther away from the existing infrastructure (i.e., roads and powerlines) and would cost more and would require more disturbance for the access road and underground powerline compared to the Proposed Action.

The Proposed Action, however, would be located approximately 850 ft south of an existing Medicine Bow Wind Project. Under the Proposed Action, the additional wind turbine and associated facilities would be similar in appearance to the existing wind turbines and would hardly be noticeable to the casual observer. Under this alternative, the low-speed wind turbine would be located 0.5 mi south of the existing Medicine Bow Wind Project, and it would be more noticeable to the casual observer when compared to the Proposed Action.

This alternative would result in increased costs and disturbance and would cause increased visual intrusion into the viewshed of the general project area compared to the Proposed Action. In addition, the USFWS recommends siting wind turbines in groups or strings to minimize impacts to avian species (USFWS 2003). Therefore, this alternative was determined not to be economically feasible or environmentally sound when compared to the Proposed Action, was eliminated from further consideration, and is not studied in detail in this EA.
3.0 AFFECTED ENVIRONMENT

3.1 LOCATION, SETTING, AND HISTORICAL USE

The proposed project would be located approximately 5 mi southwest of the community of Medicine Bow, Wyoming, in eastern Carbon County (refer to Figure 1.1). Access to the site is south from Medicine Bow, Wyoming, via the Elk Mountain to Medicine Bow Road (an unpaved public road) to unpaved private access roads located near the existing Medicine Bow Wind Project (refer to Figure 2.2). The proposed project would be located in Section 1, T21N, R79W, and the property is privately owned.

The proposed project would be located on the eastern flanks of the Hanna Basin (Lageson and Spearing 1998). The proposed project area is also located within the Upper Platte River drainage basin (Knight 1994), and the Medicine Bow River is located approximately 1.5 mi southeast of the project area. Elevation of the project area is approximately 6,750 ft above mean sea level and is relatively flat except for the western portion of the project area that gently slopes toward the west-southwest. The general project area is also relatively flat with some areas of rolling hills (refer to Figure 3.1).

Based upon 1:100,000-scale mapping, the mixed-grass prairie is the only ecological region within 1 mi of the proposed project area (U.S. Geological Survey 1996). Mixed-grass prairie is composed of grasses, forbs, and shrubs (such a needle-and-thread grass, western wheatgrass, Sandberg bluegrass, Junegrass, Indian ricegrass, scarlet globemallow, fringed sagewort, Hood's phlox, black sagebrush, and cushionplants) (Knight 1994).

Climatic conditions within the general project area are characteristic of the Foothills and Basin area of south-central Wyoming. According to weather data collected at Medicine Bow, Wyoming (approximately 5 mi northeast of the project area), record high and low temperatures are approximately 97°F and –46°F, respectively, with an average annual air temperature of

This figure is a separate file Fig 3-1.pdf.

Figure 3.1 Location of Project and PRPA Wind Turbines.

41.6°F. Summer temperatures range widely, typically with warm sunny days and cool nights. On average, there are approximately 90 frost-free days a year in the general project area (Martner 1986). The proposed project area receives approximately 10.25 inches of precipitation per year, and the prevailing winds are from the southwest (Soil Conservation Service 1988).

The general project area historically has been utilized for livestock grazing, wind energy development, oil and gas development, utility corridors, and wildlife habitat. Currently, the PRPA owns and operates the Medicine Bow Wind Farm located immediately north of the project area. This wind farm consists of 10 large (>600-kilowatt) wind turbines, two 400-ft tall guyed meteorological towers, an 800-ft² service building, and associated outbuildings and facilities. The seven of the existing wind turbines are located south of the service building and configured in a single row of turbines, and the three remaining turbines are located near of the service building. WAPA operates and maintains a 115-kilovolt powerline and electric substation that connects the PRPA wind farm to the power grid. The existing electric substation is located approximately 500 ft east of the PRPA service building, and the powerline runs northeast from the PRPA wind farm toward the community of Medicine Bow. A 69-kV transmission powerline (owned and operated by Carbon Power and Light Inc., a rural electric cooperative) runs from the northeast to the southwest through the general project area. This line provides electric service to the community of Elk Mountain but is not associated with or connected to the PRPA wind farm or WAPA powerline (refer to Figure 2.2).

3.2 AFFECTED RESOURCES

3.2.1 Cultural Resources (Including Native American Concerns)

Cultural resources are the nonrenewable physical remains of past human activity and are protected under Section 106 of the *National Historic Preservation Act of 1966*, as amended (16 U.S.C. §470 et seq), the *Archaeological Resources Protection Act of 1979*, as amended (16 U.S.C. §470aa et seq), and other laws. Archaeological investigations in south-central Wyoming indicate that human activity has occurred across the landscape over the past 10,000 years, beginning during the Paleoindian period and continuing up to the present (Frison 1991).

Results of a BLM Class I survey (i.e., file search) did not indicate that any previously identified historic or prehistoric sites were located within the project area. A Class III inventory (i.e., pedestrian survey) of the project area that included 34.4 acres did not identify any cultural resource sites (TRC Mariah Associates Inc. 2004). Several historic trails including the Overland Trail, Cherokee Trail, and the Fort Halleck to Fort Fetterman Wagon Road occur within the vicinity of the project area, but none of these trails are located within 10 mi of the project area.

Numerous Native American groups including but not limited to Crow, Shoshone, Comanche, Arapaho, Cheyenne, and Sioux have utilized the general project area and numerous sites of traditional cultural interest have previously been identified within 10 mi of the project area. Some of these sites are located near the Foote Creek Wind Farm project, the Carbon Basin Coal project, and a fiber optic project (personal communication, December 21, 2004, with Mark Soldier Wolf, Northern Arapaho Tribal Archaeological Consultant). Tribes and/or individuals were sent letters requesting their comments concerning any religious or significant cultural areas within or near the project area. To date, no historic or prehistoric sites of Native American origin, or sites or areas of traditional cultural significance have been identified within the project area.

3.2.2 Noise

The A-weighted sound pressure level, or A-scale, is used extensively in the U.S. to measure community and transportation noise and is a measure of noise in A-weighted decibels (dBA), which is directly correlated with some commonly heard sounds. Table 3.1 presents a list of commonly heard sounds with the corresponding noise level (Rau and Wooten 1980).

| Source | dBA | Description |
|-------------------------------------|-----|-------------------------------------|
| Normal breathing | 10 | Barely audible |
| Rustling leaves | 20 | |
| Soft whisper (at 16 ft) | 30 | Very quiet |
| Library | 40 | |
| Quiet office | 50 | Quiet |
| Normal conversation (at 3 ft) | 60 | |
| Busy traffic | 70 | Noisy |
| Noisy office with machines; factory | 80 | |
| Heavy truck traffic (at 49 ft) | 90 | Constant exposure endangers hearing |

 Table 3.1
 Comparison of Measured Noise Levels with Commonly Heard Sounds.¹

¹ Source: Rau and Wooten (1980).

No site-specific noise level data are available for the project area. However, major sources of noise include the wind and the PRPA wind turbines that generate noise only when they are operating. Rural areas like the project area have an average noise level of 30-45 dBA (Rau and Wooten 1980). Median noise levels for rural areas likely range from 20 to 40 dBA in the morning and evening and from 50 to 60 dBA in the afternoon when wind speeds are typically greatest. These noise levels correspond to a soft whisper (30 dBA), a library (40 dBA), a quiet office (50 dBA), a small town (40-50 dBA), and normal conversation (60 dBA). Traffic along an interstate highway typically averages noise levels greater than 70 dBA (Wyle Laboratories 1971). When operating at the optimal wind speed (33 mph), the existing PRPA wind turbines likely produce approximately 40-50 dBA of noise 800 ft downwind of the turbines (Madison Gas and Electric 2004). In high winds, the background noise produced by the wind would generally mask most of the noise from the operating wind turbines.

Noise-sensitive areas in the general project area include private residences (the closest residence is approximately 1.5 mi north of the project area), occupied raptor nests (the closest raptor nest is approximately 1.4 mi southwest of the project area), and greater sage-grouse leks during the breeding and nesting season (the closest greater sage-grouse lek is 0.4 mi south of the project area).

3.2.3 Soil Resources

The Natural Resources Conservation Service has not published a detailed soil survey report for the eastern portion of Carbon County. However, the College of Agriculture at the University of Wyoming has prepared 1:100,000 scale digital soil maps including the proposed project area (Munn and Arneson 1998). The project area includes soils from the High Plains Southeast zone, which is typically comprised of mountains and foothills. In the general project area, the surface 12 inches of soil is typically gravelly loam, and the subsoil is highly calcareous, very gravelly, and cobbly loam to sandy loam. Water erosion is slight, and wind erosion potential is moderate. These soils support a vegetative cover that typically serves as rangeland and wildlife habitat (Soil Conservation Service 1988).

3.2.4 Threatened, Endangered, Proposed, and Candidate (TEP&C) Species

3.2.4.1 Introduction

The federal *Endangered Species Act* (16 U.S.C. 1531-1543) protects federally listed threatened and endangered plant and animal species and their critical habitats. A list of federally listed TEP&C species that potentially occur in the vicinity of the proposed project was compiled from the Wyoming State Supervisor Office of the USFWS (2004) and the Wyoming Natural Diversity Database (WNDD) (2004).

TEP&C species are those that have been specifically designated as such by the USFWS. Endangered species are those that are in danger of extinction throughout all or a significant portion of their range. Threatened species are those that are likely to become endangered in the foreseeable future throughout all or a significant portion of their range. Candidate species are those for which the USFWS has sufficient data to list as threatened or endangered but for which proposed rules have not yet been issued. Proposed species are those for which the USFWS has published proposed rules in the *Federal Register* for listing of the species but for which a final rule has not been adopted.

3.2.4.2 TEP&C Animal and Plant Species

The black-footed ferret (*Mustela nigripes*), a federal endangered species; bald eagle (*Haliaeetus leucocephalus*), a federal threatened species; Ute ladies'-tresses (*Spiranthes diluvalis*), a federal threatened species; and Platte River system species--whooping crane (*Grus americana*), interior least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), bald eagle (*Haliaeetus leucocephalus*), Eskimo curlew (*Numenius borealis*), and western prairie fringed orchid (*Platanthera praeclara*)--may potentially occur within the project area or may be affected by the Proposed Action (refer to Table 3.2). No other TEP&C species as designated by the USFWS have been identified to potentially occur within the project area (USFWS 2004).

<u>Black-footed Ferret</u>. The black-footed ferret, a federally listed endangered species, was once distributed throughout the high plains of the Rocky Mountain and western Great Plains regions (Clark and Stromberg 1987; Forrest et al. 1985). Prairie dogs are the main food of black-footed ferrets (Sheets et al. 1972), and historically a few black-footed ferrets have been collected away from prairie dog towns (Forrest et al. 1985). The last known wild population of black-footed ferrets was discovered in the Pitchfork area near Meeteetse in 1981. Due to the fear that canine distemper would wipe out this population, the remaining black-footed ferrets were captured from the Pitchfork area and placed into a captive breeding project in 1985 (Wyoming Game and Fish Department [WGFD] 1997).

| Table 3.2 | Federal | Threatened, | Endangered, | Proposed | and | Candidate | Species | and | Their |
|-----------|----------|--------------|---------------|-------------|------|-----------------|---------|-----|-------|
| | Potentia | 1 Occurrence | Within the Pr | oject Area, | 2004 | 4. ¹ | | | |

| Common Name | Scientific Name | Federal Status ² | Potential Occurrence Within the Proposed Project Area ³ |
|--------------------------------|--------------------------|-----------------------------|---|
| MAMMALS | | | |
| Black-footed ferret | Mustela nigripes | Е | Х |
| BIRDS | | | |
| Bald eagle ⁴ | Haliaeetus leucocephalus | Т | R |
| PLANTS | | | |
| Ute ladies'-tresses | Spiranthes diluvialis | Т | Х |
| PLATTE RIVER SYSTEM SPECIES | Various ⁵ | n/a | n/a |

Adapted from USFWS (2004).

Federal status (USFWS 2004):

E = listed as federally endangered.

T = listed as federally threatened.

n/a = not applicable.

³ Species occurrence:

R = Rare; species may be in the project area for just a few days or hours (e.g., stopping over during migration). Encounters during project construction is very unlikely.

X = Unlikely; there has been no recent historical record of the species's occurrence in the project area; probability of encountering the species during powerline construction is very unlikely.

n/a = not applicable.

⁴ Proposed for removal from federal listing.

⁵ Includes whooping crane (*Grus americana*), interior least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), bald eagle (*Haliaeetus leucocephalus*), Eskimo curlew (*Numenius borealis*), and western prairie fringed orchid (*Platanthera praeclara*).

As a result of the captive breeding and reintroduction program, black-footed ferrets have been successfully released into several areas in the west including the Shirley Basin Ferret Management Area located approximately 30 mi north of the project area. Eighty-eight black-footed ferrets were counted during surveys conducted in August 2004. This is an increase of 36 black-footed ferrets (69%) more than the 52 individuals counted during August 2003 (Casper-Star Tribune 2004).

The Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act (USFWS 1989) defines potential black-footed ferret habitat as any white-tailed prairie dog

towns or complexes greater than 200 acres in size. Based on the results of a reconnaissance survey conducted by TRC Mariah Associates Inc. on October 28, 2004, no prairie dogs were identified within the project area. In addition, while potential black-footed ferret may travel through the general project area, the project area is located outside of any area requiring black-footed ferret surveys (USFWS 2004). In addition, no recent black-footed ferret observations have been recorded in the vicinity of the project area (USFWS 2004; WNDD 2004). Therefore, it is unlikely that any black-footed ferrets would occur in the project area.

<u>Bald Eagle</u>. The bald eagle is a federally listed threatened species (downlisted from endangered and now proposed for removal from federal listing). This species requires cliffs, large trees, or sheltered canyons associated with concentrated food sources (e.g., fisheries or waterfowl concentration areas) for nesting and/or roosting areas. Bald eagles forage over wide areas during the non-nesting season (i.e., fall and winter) and scavenge on animal carcasses such as pronghorn antelope, deer, and elk (Edwards 1969; Snow 1973; Call 1978; Steenhof 1978; Peterson 1986).

No bald eagle nests or winter roosts are known to occur in the project area or within the general project area, due to the lack of suitable nesting or winter roosting habitats. There are no known bald eagle nests with 15 mi of the proposed project area (BLM 2003) and there have been no documented mortalities of bald eagles associated with the Phase I portion of the Foote Creek Rim Windpower project located approximately 10 mi southeast of the proposed project area (Young et al. 2003). Although searches of the WNDD revealed no records of bald eagles in the vicinity of the proposed project area (WNDD 2004), it is possible that individuals may occasionally forage in or fly through the general project area.

<u>Ute Ladies'-tresses</u>. Ute ladies'-tresses, a federally listed threatened species, is a perennial member of the orchid family that inhabits moist streambanks, wet meadows, and abandoned stream channels at elevations of 4,500-6,800 ft (Fertig 1994; Spackman et al. 1997). Although the species will tolerate mildly alkaline conditions, it is unlikely to be found in association with Gardner's saltbush, greasewood, or other alkaline vegetation. Where it occurs in ephemeral drainages, groundwater is typically shallow (i.e., within approximately 18 inches of the ground

surface) (personal communication, March 16, 2000, with Pat Deibert, USFWS; personal communication, March 22, 2000, with Walt Fertig, WNDD).

The species has been documented in Goshen, Converse, and Niobrara Counties in Wyoming (Fertig 1994) and along the Front Range in northern and central Colorado (Spackman et al. 1997). Although much time has been devoted in recent years to determining areas in Wyoming where the species occurs, it has not been documented within the proposed project area, the general project area, or Carbon or Albany Counties (WNDD 2004). Based on visual observation of the project area and descriptions for vegetation communities in the project area, there is no suitable habitat for Ute ladies'-tresses within the project area or immediate project area. There would be no affect from the project, and the species is not discussed further in this EA.

<u>Platte River System Species</u>. The USFWS has determined that water depletion to the Platte River system may adversely affect the federally listed whooping crane (*Grus americana*), interior least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), bald eagle (*Haliaeetus leucocephalus*), Eskimo curlew (*Numenius borealis*), and western prairie fringed orchid (*Platanthera praeclara*). Water depletions include evaporative losses or consumptive use including, but not limited to, ponds, lakes, reservoirs, created or enhanced wetlands, hydrostatic testing of pipelines, wells, diversion structures, dust abatement, etc. The Proposed Action would not result in any water depletions from the Platte River system and would not result in any adverse indirect impacts to these species; therefore they are not discussed further in this EA.

<u>Boreal Toad</u>. The boreal toad is not a listed species (threatened, endangered, proposed, or candidate) under the federal *Endangered Specie Act*. However, the USFWS has determined that sufficient information exists to list the species as a candidate species, but the USFWS has not proposed the species for listing because of higher priority listing actions (USFWS 2004). The boreal toad (*Bufo boreas boreas*) is one of two subspecies of the western toad that is found throughout much of the western U.S. The range of the boreal toad currently extends from western British Columbia to southern Nevada and east to parts of Wyoming. Wyoming is on the

southeastern periphery of the boreal toad distribution, and it has been found in the south-central and northwestern portion of the state. In Wyoming, boreal toads generally occur between 7,500 to 12,000 ft above mean sea level and are usually found in wetlands near ponds, lakes, reservoirs, rivers, and streams. There are no recorded occurrences of boreal toads in the general project area (WNDD 2004; WGFD 1999), and there is no suitable habitat within the project area. Therefore, there would be no affect from the project and the species is not discussed further in this EA.

3.2.5 Vegetation Resources

Based upon 1:100,000-scale mapping, the mixed-grass prairie is also the only ecological region within 1 mi of the proposed project area (U.S. Geological Survey 1996). Mixed-grass prairie is composed of grasses, shrubs, and forbs such a needle-and-thread grass, western wheatgrass, Sandberg bluegrass, Junegrass, Indian ricegrass, scarlet globemallow, fringed sagewort, Hood's phlox, black sagebrush, and cushion plants (Knight 1994).

3.2.6 Visual Resources

The Proposed Action would be located on Spade Flats, which generally provides a 360-degree perspective of portions of the surrounding plains, foothills, and mountains. PRPA's Medicine Bow Wind Farm dominates the view to the north of the project area.

Approximately 800 ft north of the proposed wind turbine is the southern most PRPA wind turbine, followed in a line by the remaining six wind turbines. The other three wind turbines, not located in the row of wind turbines, as well as the two meteorological towers, the service building, the electric substation, the WAPA and Carbon Power and Light powerlines and associated facilities, are also visible north of the project area.

To the east, there is little evidence of human encroachment except for the top of numerous wind turbines associated with the Foote Creek Wind Farm that are located along the horizon southeast of the project area. These wind turbines are located approximately 10 mi away from the project area.

To the south, there is also limited evidence of human encroachment except for tops of additional wind turbines associated with the Foote Creek Wind Farm that are located along the horizon south of the project area. These wind turbines are located approximately 12 mi south of the project area. Portions of Carbon Power and Light's electric transmission powerline and the Medicine Bow to Elk Mountain road are both visible southwest of the project area and continue beyond out of view of the project area.

To the west, another portion of Carbon Power and Light's small electric transmission powerline and the Medicine Bow to Elk Mountain road are both visible.

Because of topographic diversity in the area (i.e., rolling hills), the proposed project would not be visible from the communities of Medicine Bow, Rock River, McFadden, Arlington, Hanna, or Elk Mountain. However, the existing Medicine Bow Wind Farm and the proposed Clipper wind turbine would be visible from portions of U.S. Highway 30.

3.2.7 Water Resources (Surface Water Including Wetlands)

The project area lies within the Upper Platte River drainage basin; however, there are no defined ephemeral, intermittent, or perennial drainage channels in the project area (refer to Figure 3.2).

This figure is a separate file Fig 3-2.pdf.

Figure 3.2 Surface Water Features near the Project Area.

The project area is on the northwestern side of Spade Flats and is extremely flat, and the fact that little surface water runoff is produced is evidenced by the lack of any defined drainage channels and the presence of several small playas in the general project area. Any surface water runoff that is produced would eventually flow into the Medicine Bow River located approximately 1.5 mi southeast of the project area.

No surface water quality data are available from the project area. However, water quality is expected to be highly variable depending upon the nature and intensity of the runoff event and the nature of the affected soils. A comparison of water quality from the general area to WDEQ/WQD Chapter 8 water class standards (WDEQ/WQD 2000) indicates that surface water quality would typically meet Class III (livestock class of use) criteria (U.S. Geological Survey 2004). The Medicine Bow River in the general project area is designated as having Class 2AB surface water quality as defined by the WDEQ/WQD. The Class 2AB designation means that these waters can support game and non-game fish species (WDEQ/WQD 2001). There are no drainage channels or reservoirs within the general project area that are included in the WDEQ/WQD (2002) 2000 303(d) list of water bodies with water quality impairments.

No formal jurisdictional wetland delineations have been conducted within the project area. However, according to National Wetland Inventory maps produced by the USFWS, there are no potential wetlands in the project area or within 0.5 mi of the project area (USFWS 1997).

3.2.8 Wildlife

3.2.8.1 Big Game

According to the WGFD, three big game species--pronghorn, mule deer, and elk--occur within or immediately adjacent to the proposed project area (WGFD 2003b). The population estimates for big game herds provided below are based upon WGFD model estimates (WGFD 2004).

<u>Pronghorn</u>. Pronghorn in the project area belong to the Medicine Bow pronghorn herd (herd unit 525), and the project area is located in crucial winter/yearlong antelope range (WGFD 2004) (refer to Figure 3.3). Pronghorn were observed in and adjacent to the project area during a reconnaissance survey conducted by TRC Mariah Associates Inc. in October 2004. At the end of 2003, the Medicine Bow herd unit had an estimated population of 56,804 pronghorn, which is approximately 5% below the WGFD population objective of 60,000 animals for this herd unit. Drought continues to be one of the biggest factors affecting populations in herd units with populations below WGFD objectives (WGFD 2004).

<u>Mule Deer</u>. Mule deer in the project area belong to the Sheep Mountain mule deer herd (herd unit 539) and the project area lies within winter/yearlong range. The nearest mule deer crucial winter range is located approximately 1 mi southeast of the project area (WGFD 2004). No mule deer were observed in and adjacent to the project area during a reconnaissance survey conducted by TRC Mariah Associates Inc. in October 2004. At the end of 2003, the Sheep Mountain herd unit had an estimated population of 10,885 mule deer, which is approximately 27% below the WGFD population objective of 15,000 animals for this herd unit. Drought continues to be one of the biggest factors affecting mule deer in herd units with populations below WGFD objectives. In addition, chronic wasting disease has been documented in portions of this herd unit and may be having some effect on animal survival (WGFD 2004).

<u>Elk</u>. Elk in the project area belong to the Snowy Range Elk Herd (herd unit 533), and the project area lies within winter/yearlong range. The nearest elk crucial winter range is located approximately 13 mi south of the project area (WGFD 2004). No elk were observed in and adjacent to the project area during a reconnaissance survey conducted by TRC Mariah Associates Inc. in October 2004. At the end of 2003, the Snowy Range herd unit had an estimated population of 5,473 elk-- approximately 9% below the WGFD population objective of 6,000 animals. Drought and habitat issues continue to be important factors affecting elk in herd units with populations below WGFD objectives (WGFD 2004).

This figure is a separate file Fig 3-3.pdf.

Figure 3.3 Pronghorn Ranges near the Project Area.

3.2.8.2 Other Mammals

Typical predators known to occur or to potentially occur in the project area are coyote, red fox, raccoon, long-tailed weasel, badger, mink, striped skunk, mountain lion, and bobcat. Lagomorph species include desert cottontail, mountain (Nuttall's) cottontail, and white-tailed jackrabbit. Squirrels known to occur or to potentially occur include least chipmunk, Richardson/Wyoming ground squirrel, and thirteen-lined ground squirrel, and other rodents include one species of pocket gopher (northern), two species of pocket mouse (olive-backed and northern), Ord's kangaroo rat, beaver, deer mouse, northern grasshopper mouse, bushy-tailed woodrat, five species of vole (southern red-backed, western, meadow, long-tailed, and sagebrush), and western jumping mouse. Porcupine and four species of bats (little brown, hoary, big brown, silver-haired) also likely occur in the general project area (WGFD 1999; Clark and Stromberg 1987).

3.2.8.3 Raptors

Raptor species known to occur or to potentially occur within the project area include peregrine falcon, golden eagle, prairie falcon, American kestrel, merlin, Swainson's hawk, ferruginous hawk, red-tailed hawk, northern harrier, rough-legged hawk, and great horned owl, burrowing owl, long-eared owl, and short-eared owl (WGFD 1999; Clark and Stromberg 1987). A review of BLM historic raptor nest information reveals that there are no known raptor nests within 1.0 mi of the project area. However, there are five raptor nests/eyries within 2.0 mi of the proposed project area--two golden eagle, two prairie falcon, and one ferruginous hawk (refer to Figure 3.4). No monitoring has occurred at these sites; therefore, the historic activity status of these nests is unknown.

3.2.8.4 Upland Game Birds

The project area is located within WGFD Upland Game Bird Management Area Number 24. Several upland game bird species occur on and adjacent to the project area, including greater sage-grouse and mourning dove (WGFD 2002).

This figure is a separate file Fig 3-4.pdf.

Figure 3.4 Raptor Nest Locations near the Project Area.

Two greater sage-grouse leks are known to occur within 2 mi of the project area (WGFD 2003a). The leks are approximately 0.5 mi and 0.7 mi south of the project area (refer to Figure 3.5). According to WGFD records, 1980 was the last time any greater sage-grouse were observed at either of these leks; however, no monitoring was conducted at either lek between 1980 and 1998. Over the past 6 years, both leks were monitored several times each breeding season, except during 2001 when no monitoring was conducted. No greater sage-grouse have been observed at either of these leks during the 1999 to 2004 monitoring period. WGFD and BLM policy states that greater sage-grouse leks are considered active unless there is no grouse attendance at the leks for 10 consecutive years. Despite the lack of monitoring data at the two leks located nearest the project area, it is the WGFD biologists' opinion that these two leks are abandoned (personal communication, October 29, 2004, with Bob Lanka, WGFD biologist, Laramie, Wyoming). However, the WGFD are waiting for additional monitoring data before they make a final determination on the status of these leks.

3.2.8.5 Other Birds (Including Migratory Birds)

Bird species (including migratory birds) potentially occurring within the project area, based upon range and habitat preference, include but are not limited to common nighthawk, Say's phoebe, western kingbird, horned lark, swallows (e.g., violet-green, barn, cliff), black-billed magpie, common raven, American crow, rock wren, mountain bluebird, loggerhead shrike, Brewer's sparrow, vesper sparrow, savannah sparrow, sage sparrow, lark bunting, McCown's longspur, red-winged blackbird, western meadowlark, Brewer's blackbird, common grackle, green-tailed towhee, and brown-headed cowbird (WGFD 1999).

Since there are no permanent surface water bodies (i.e., lakes, ponds, etc.) within the project area, it is unlikely that waterfowl and shorebirds would nest in the project area. However, several species of wading/shore birds--such as great blue heron, black-crowned night-heron, American avocet, willets, killdeer, and spotted sandpiper--and waterfowl may occasionally occur around East Allen Lake (located approximately 3 mi north of the project area), the Medicine Bow River (located approximately 1.5 mi southeast of the project area), and seasonal ponds (i.e.,

This figure is a separate file Fig 3-5.pdf.

Figure 3.5 Greater Sage-grouse Leks near the Proposed Project Area.

playas) (located within 3 mi of the project area). Waterfowl species likely to occur in the general project area include pied-billed grebe, American coot, Canada goose, mallard, green-winged teal northern pintail, blue-winged teal, cinnamon teal, northern shoveler, redhead, ring-necked duck, American wigeon, and common merganser (WGFD 1999).

3.2.8.6 Amphibians, Reptiles, and Fish

Based on range and habitat preference, it is likely that three amphibians and three reptile species may possibly occur within the project area or within 3 mi of the project area. Amphibians include tiger salamander, chorus frog, and northern leopard frog that occur primarily in and adjacent to aquatic habitats. Reptile species include northern sagebrush lizard, prairie rattlesnake, and western garter snake (BLM 1998; WGFD 1999).

There are no perennial waters; therefore, no fish occur within the project area. However, the Medicine Bow River (located approximately 1.5 mi southeast of the project area) is designated by the WGFD as a Class 4 stream. WGFD Class 4 streams are considered low-production trout water that may provide fisheries of local importance but are generally incapable of sustaining substantial fishing pressure. The section of the Medicine Bow River located near the project area likely supports a variety of fish species including brown tout, brook trout, rainbow trout, walleye, longnose dace, longnose sucker, white sucker, common carp, creek chub, silver shiner, and johnny darter (BLM 1998).

4.0 ENVIRONMENTAL CONSEQUENCES

In accordance with 40 C.F.R. 1502.16, this chapter of the EA includes a discussion of the potential environmental consequences of the Proposed Action and the No Action Alternative on each of the affected resources. An environmental impact is defined as a change in the quality or quantity of a given resource due to a modification in the existing environment resulting from project-related activities. Impacts may be beneficial or adverse, may be a primary result (direct) or secondary result (indirect) of an action, and may be permanent and long-term or temporary and of a short duration. Impacts may vary in degree from a slightly discernible change to a total change in the environment. This impact assessment assumes that all applicant-committed measures described in the Proposed Action would be successfully implemented. If such measures are not implemented, additional adverse impacts may occur.

Cumulative impacts are discussed in Section 4.9, irreversible and irretrievable commitments are discussed in Sections 4.10, and short-term use of the environment versus long-term productivity is discussed in Section 4.11.

4.1 CULTURAL RESOURCES (INCLUDING NATIVE AMERICAN CONCERNS)

4.1.1 Proposed Action

Class I and III surveys (i.e., file search and pedestrian inventory) have been completed for the project area, and no historic or prehistoric sites were identified. Therefore, the Proposed Action would not have any direct impacts on identified cultural resources within the project area. In addition, the project area would not be visible from any of the historic trails (Overland Trail, Cherokee Trail, and the Fort Halleck to Fort Fetterman Wagon Road); therefore, the Proposed Action would not have any visual impacts on historic trails in the general area.

As discussed in the Proposed Action (Section 2.0), Clipper and its contractor would stop work if any cultural resources are discovered during construction operations. Work in the area of the discovery would not resume until the appropriate regulatory agency would be notified and appropriate treatment plans implemented. Construction employees would be instructed that they would be working on private land and are not to search for, scavenge, or remove any cultural resources found while working on the project (refer to applicant-committed practices presented in Chapter 2).

Consultation with Native American groups has been initiated (i.e., letters were sent to the tribes), and no sites of religious or traditional cultural importance have been identified within the project area. Formal consultation is ongoing between DOE and one of the tribal organizations that was previously contacted; however, the consulting tribe has not identified to DOE any traditional cultural properties or specific Native American issues concerning the Proposed Action. There are no known historic, archaeological, or tribal resources within the project site, therefore no impacts are anticipated as a result of the proposed action. If previously unidentified sites of religious or cultural importance are identified within the project area through tribal consultation or during construction of the project, DOE would review the potential impacts consistent with the applicant-committed practices cited in Chapter 2 to verify they are sufficient to minimize any impacts.

Therefore, documented and undocumented cultural resources would be protected during construction, operations, and maintenance operations and no unmitigated cultural resources that are eligible for listing on the NRHP would be impacted by the Proposed Action. No additional mitigation beyond those already included in the Proposed Action would be required. The Proposed Action would not have any significant impacts on cultural resources.

4.1.2 No Action Alternative

Under the No Action Alternative, the DOE would not fund of the Proposed Action, construction of the demonstration wind turbine and associated facilities would not occur, and no impacts to cultural resources would occur.

4.1.3 Mitigation and Monitoring

No additional mitigation or monitoring is recommended beyond the applicant-committed practices identified in Chapter 2.

4.1.4 Residual Impacts

The Proposed Action would not result in any unavoidable adverse impacts to identified unmitigated cultural resources. However, some loss of unidentified cultural resources sites or artifacts may occur, but, if previously unidentified cultural resources are located during construction operations, activity in the area would be halted, the proper regulatory authority would be contacted, and appropriate treatment plans implemented to avoid significant impacts.

4.2 NOISE

4.2.1 Proposed Action

There are no applicable federal, state, or county regulations governing environmental noise levels in the project area. Under the Proposed Action, the noise would be generated during construction/installation and operation of a single 2.5-MW wind turbine that is expected to generate 105 dBA at 415 ft in an 18 mph wind. As a result of the Proposed Action, there would be an increase in noise due to the operation of the additional wind turbine (40-60 dBA for the background and the Medicine Bow Wind Farm compared to 105 dBA from the proposed Clipper wind turbine). As a result, the noise would only occur when the wind turbine is operating and would likely be masked by the background noise level (including wind and existing PRPA wind turbines) that could be as high as 40-60 dBA. The increased level of noise would not likely be highly noticeable more than 1,000 ft away from the wind turbine.

The increase in noise due to the Proposed Action would not be noticeable to the casual observer located on the nearest public road (the Medicine Bow to Elk Mountain Road), which is

approximately 1 mi north and west of the project area, or to the nearest residence approximately 1.5 mi north of the project area. The increased noise would not be expected to adversely impact the nearest raptor nest 1.4 mi southwest (upwind) of the project area. The potential impacts of noise on greater sage-grouse leks is addressed in Section 4.8 of the EA.

The impacts of the increased level of noise would only occur when the turbine is operating and would be eliminated after the wind turbine has been decommissioned and the equipment removed. No additional mitigation beyond those already included in the Proposed Action would be required. Therefore, the Proposed Action would not result in any significant impacts to noise-sensitive receptors.

4.2.2 No Action Alternative

Under the No Action Alternative, the DOE would not fund of the Proposed Action, construction of the demonstration wind turbine and associated facilities would not occur, and noise levels would continue to be primarily influenced by wind and the existing PRPA wind farm.

4.2.3 Mitigation and Monitoring

No additional mitigation or monitoring is recommended beyond the applicant-committed practices identified in Chapter 2.

4.2.4 Residual Impacts

As a result of the Proposed Action, there would be an increase (40-60 dBA compared to 106 dBA) in noise due to the operation of the additional wind turbine. However, the noise would only occur when the wind turbine is operating and would generally be masked by the background noise level (including wind and PRPA wind turbines) that could be as high as 40-60 dBA.

4.3 SOIL RESOURCES

4.3.1 Proposed Action

Under the Proposed Action, less than 10 acres would be newly disturbed by construction/installation operations. Because of the small amount of area (less than 1.25 acres) that would be disturbed for the life-of-the-project for the construction of the wind turbine, service building, and meteorological tower, and cables and powerline no topsoil would be removed or salvaged. Instead, wheeled vehicles that operate off-road would disturb the remaining 8.45 acres. Direct impacts to soils would be limited to compaction of soils when construction equipment operates off of existing roads. These impacts may result in an increase in runoff, erosion, and sedimentation into any local receiving waters.

Short-term control of surface runoff would be accomplished by implementation of storm water pollution control measures required by the WDEQ/WQD and described in the Proposed Action. In addition, long-term control of surface runoff would be accomplished by successful implementation of the stabilization and reclamation operations described in the Proposed Action. Stabilization and reclamation procedures would be designed to reduce the susceptibility of disturbed areas to soil erosion in both the short-term and for the life of the project. No additional mitigation beyond those already included in the Proposed Action would be required. The Proposed Action would not have significant impacts on soil resources.

4.3.2 No Action Alternative

Under the No Action Alternative, the DOE would not fund the Proposed Action, construction of the demonstration wind turbine and associated facilities would not occur, and existing impacts (e.g., erosion, etc) to soil resources in the project area would continue to occur at current rates.

4.3.3 Mitigation and Monitoring

No additional mitigation or monitoring is recommended beyond the applicant-committed practices identified in Chapter 2.

4.3.4 Residual Impacts

The Proposed Action would result in some increased and unavoidable soil loss through wind and water erosion. Soils on approximately 8.45 acres (i.e., temporary disturbance areas) would be compacted as a result of off-road vehicle traffic. Productivity of some disturbed soils would be slightly reduced due to the compaction of soils; however, these impacts would be short-term (i.e., 3-5 years) and would be mitigated by implementation of the reclamation and stabilization procedures.

4.4 THREATENED, ENDANGERED, PROPOSED, AND CANDIDATE (TEP&C) SPECIES

4.4.1 Proposed Action

4.4.1.1 Black-footed Ferrets

No prairie dogs are known to occur with the project area, and there have been no black-footed ferrets sightings or signs have been documented within the project area. In addition, the project area is located outside of any areas requiring black-footed ferret surveys (USFWS 2004). Therefore, the Proposed Action would have no adverse affects to black-footed ferrets.

4.4.1.2 Bald Eagle

Migrating bald eagles may occasionally forage or fly through the project area; however, such use of the project area is likely intermittent and for relatively short periods. There is a chance that bald eagles might collide with the operating wind turbine or the meteorological tower and guy wires. However, given this intermittent use, the lack of nesting and roosting habitat in the immediate project area, and the lack of any new aboveground powerlines, it is anticipated that the Proposed Action may affect, but would not adversely affect, bald eagles.

4.4.1.3 Summary

Based on the discussion presented above and assuming all appropriate mitigation measures are implemented, the Proposed Action would not have any significant impacts on any TEC&P species.

4.4.2 No Action Alternative

Under the No Action Alternative, the DOE would not fund the Proposed Action, construction of the demonstration wind turbine and associated facilities would not occur, and impacts to TEC&P species would continue at present levels, with fluctuations due primarily to weather, disease, and other natural causes.

4.4.3 Mitigation and Monitoring

No additional mitigation or monitoring is recommended beyond the applicant-committed practices identified in Chapter 2.

4.4.4 Residual Impacts

Under the Proposed Action, there would be a negligible increase in the risk of collisions of bald eagles with the proposed wind turbine and/or meteorological tower. There would also be negligible additional impacts to any other TEC&P species that may occur in the project area.

4.5 VEGETATION RESOURCES

4.5.1 Proposed Action

Under the Proposed Action, less than 10 acres would be disturbed by construction operations. Because less than 1.25 acres would be disturbed for the life-of-the-project for the construction of the wind turbine, service building, meteorological tower, and cables and powerline, no topsoil would be removed or salvaged. Instead, wheeled vehicles that drive cross-country would disturb the remaining 8.45 acres. Direct impacts would be limited to compaction/destruction of vegetation when construction equipment operates off any roads. These impacts may result in a limited increase in runoff, erosion, and sedimentation into any receiving waters. All disturbed vegetation would be of a kind that is common and widespread in the project area and vicinity.

Short-term control of surface runoff would be accomplished by implementation of storm water pollution control measures required by the WDEQ/WQD and described in the Proposed Action. In addition, long-term control of surface runoff would be accomplished by successful implementation of the stabilization and reclamation operations described in the Proposed Action. No additional mitigation beyond those already included in the Proposed Action would be required. The Proposed Action would not have any significant impacts on vegetation.

4.5.2 No Action Alternative

Under the No Action Alternative, the DOE would not fund the Proposed Action, construction of the demonstration wind turbine and associated facilities would not occur, and impacts to vegetation resources would continue to occur at current rates.

4.5.3 Mitigation and Monitoring

No additional mitigation or monitoring is recommended beyond the applicant-committed practices identified in Chapter 2.

4.5.4 Residual Impacts

The Proposed Action would result in long-term disturbance of 1.25 acres of vegetation and approximately 8.45 acres of short-term vegetation disturbance. Once construction operations are updated, stabilization and reclamation operations would be conducted, and vegetation would be re-established on all but 1.25 acres. Once the project has been decommissioned, all disturbed areas would be reclaimed. These impacts assume that the site would not be repowered.

4.6 VISUAL RESOURCES

4.6.1 Proposed Action

The Proposed Action would result in limited changes and impacts to existing visual resources and aesthetics of the general project area. The general project area has already been altered by human encroachment including the PRPA Medicine Bow Wind Farm, the Elk Mountain to Medicine Bow unpaved road, and the WAPA and Carbon Power and Light powerlines. The existing PRPA Medicine Bow Wind Farm dominates the view of and from the project area. The 10 wind turbines, two meteorological towers, service building, and access roads are the most visible components. The turbine towers for the seven existing wind turbines (Vestas [brand] 660-kW units), located south of the service building, are 164-ft tall, and the maximum height at the top of each turbine blade is 241 ft. The turbine tower for the proposed demonstration wind turbine would be 262 ft high (approximately 100 ft higher than the existing towers) and the maximum height at the top of the blade would be approximately 410 ft (approximately 169 ft higher than the maximum height of the existing turbines). The proposed wind turbine would be taller than the existing turbines but would likely be only slightly more visible (because of the height) from a distance than the existing wind turbines. The existing wind turbine towers and blades are painted white, and the proposed wind turbine (tower and blades) would also be painted white. While approximately 60% taller than the existing wind turbines, the proposed wind turbine would not dominate the local viewshed and would likely blend into the existing PRPA wind farm.

The proposed wind turbine as viewed from the unpaved Elk Mountain to Medicine Bow road would likely appear to be an additional and larger wind turbine that from a distance would blend in with the existing wind turbines. The proposed service building would be painted a desert tan color to blend into the existing environment. The meteorological tower would be a lattice design and would not be noticeable from more than 1 mi from the project area. Therefore, the Proposed Action would blend into the existing wind farm and would not dominate the local viewshed. Nor would the Proposed Action dominate the viewshed beyond 3 mi as the size difference between the proposed wind turbine and the existing wind turbines would appear less as the distance from the viewer increases. In addition, the Proposed Action would not be visible from Medicine Bow, Rock River, McFadden, Arlington, Hanna, or Elk Mountain. No additional mitigation beyond those already included in the Proposed Action would be required. The Proposed Action would be a continuation of existing wind energy development in the general area, would not attract additional or new attention, and would have nonsignificant impacts on visual resources and aesthetics.

4.6.2 No Action Alternative

Under the No Action Alternative, the DOE would not fund the Proposed Action, construction of the demonstration wind turbine and associated facilities would not occur, and no additional impacts to visual resources would occur.

4.6.3 Mitigation and Monitoring

No additional mitigation or monitoring is recommended beyond the applicant-committed practices identified in Chapter 2.

4.6.4 Residual Impacts

The construction and operation of the Proposed Action would result in some additional impacts to visual resources. The wind turbine would be the most visible component of the Proposed

Action. Vegetation would be compacted when vehicles operate off-road, and these impacts would be visible for 2-4 years. Visual impacts would be minimized to the casual observer with the Proposed Action being located immediately adjacent to the existing PRPA wind farm. Impacts would continue for approximately 20 years until the wind turbine and associated facilities are decommissioned, removed, and the disturbed areas reclaimed and revegetated.

4.7 WATER RESOURCES (SURFACE WATER INCLUDING WETLANDS)

4.7.1 Proposed Action

The Proposed Action would result in limited short-term impacts to surface water resources. Direct impacts would result from approximately 10 acres of soil disturbance and excavation associated with construction of the pads for the wind turbine, meteorological tower, and service building, from the construction of the access road, and from compaction of vegetation and soil due to equipment operating off of existing access roads. These actions would cause a limited increase in sedimentation and off-site channel erosion. However, these impacts would be mitigated by implementation of the storm water pollution prevention plan (TRC Mariah Associates Inc. 2004) and by pollution prevention measures such as interceptor ditches, sediment traps/silt fences, water bars, and silt fences. Implementation of prompt reclamation and stabilization procedures presented in the Proposed Action would also minimize potential impacts to surface water resources. There are no jurisdictional wetlands in the project area; therefore, the Proposed Action would not have any impacts on wetlands. No additional mitigation beyond those already included in the Proposed Action would be required. The Proposed Action would have negligible short-term and no long-term impacts on water quality and no short-term or long-term impacts on water resources.

4.7.2 No Action Alternative

Under the No Action Alternative, the DOE would not fund the Proposed Action, construction of the demonstration wind turbine and associated facilities would not occur, and impacts to surface water resources would continue at current rates.

4.7.3 Mitigation and Monitoring

No additional mitigation or monitoring is recommended beyond the applicant-committed practices identified in Chapter 2.

4.7.4 Residual Impacts

Even with the implementation of the Storm Water Pollution Prevention Plan, there would be a negligible short-term increase in sedimentation during the construction/installation phase of the Proposed Action. However, there would no reduction in surface water flow due to the Proposed Action. Impacts that occur during the construction/installation phase of the Proposed Action would be pro-actively mitigated as discussed above. Compared to the construction phase, the annual rate of sedimentation would decrease during the operations phase of the project. Following decommissioning and removal of the project and successful completion of permanent reclamation and stabilization operations, surface water quality would eventually return to preconstruction levels.

4.8 WILDLIFE

4.8.1 Proposed Action

Direct impacts to wildlife would result from the direct loss of habitat due to the construction/installation of project-related facilities and vegetation compaction; displacement of wildlife due to disturbance by project-related activities; direct mortality due to construction- and

operational-related activities; increased mortality due to poaching and harassment; and an increased likelihood of vehicle/animal collisions due to increased traffic. Because the Proposed Action would be located immediately adjacent to the existing PRPA wind farm, the addition of the Proposed Action would not be likely to have any significant short- or long-term impacts on wildlife populations.

Construction/installation activities would likely cause some wildlife species that currently utilize the project area to temporarily vacate the area (up to 0.5 mi or more) around the active area while construction operations are occurring. The temporary loss of big game habitat due to the construction related facilities and vegetation compaction would be mitigated by the fact that the project area would be limited to less than 10 acres, construction operations would likely require only 2 months to complete, and applicant-committed measures included in the Proposed Action would minimize surface disturbance. Once construction operations have been completed, most affected species would likely re-utilize the impacted portion of the project area.

4.8.1.1 Big Game

The project area is located in crucial winter/yearlong range for pronghorn and winter/yearlong range for mule deer and elk. However, the Proposed Action would directly impact less than 10 acres of native vegetation. During severe winters, crucial winter ranges are important because these areas can provide animals with exposed vegetation and topographic protection from extremely harsh weather conditions. In addition, crucial winter ranges are important in maintaining a self-sustaining population at or above WGFD population objectives over the long term. During the 2-month construction period, there could be an indirect impact of the temporary displacement of pronghorn that would normally occupy the immediate project area. In addition to the project area, the temporary displacement could also include a 0.5-mi area around the project area or a total of 503 acres (0.79 mi²).

The project area is located in a crucial winter/yearlong range for pronghorn that contains 361,000 acres (564 mi²). Therefore, the construction/installation phase of the Proposed Action (that may

occur during a severe winter) could potentially displace pronghorn from approximately 0.2% of the crucial winter big game range located in the general vicinity of the project area. It is expected that any displaced pronghorn would relocate to unaffected portions of the 564-mi² crucial winter/yearlong habitat that exists near the project area. While some pronghorn may be temporarily displaced from the project area, the displacement would be temporary, would impact only 0.2% of the crucial winter/yearlong habitat within the general project area. To minimize potential impacts to pronghorn, construction activities would be limited during severe winter conditions. Specifically, Clipper would maintain contact with local WGFD personnel, and if it is determined by WGFD that severe winter conditions exist, Clipper would limit the number of construction vehicles that would be allowed to access the site. In addition, Clipper would minimize the amount of time personnel would be at the construction site. Reclamation and revegetation procedures would be followed to minimize the long-term loss of habitat. The Proposed Action would not have a significant impact on the local pronghorn population.

If the project area does not experience a severe winter during the construction phase, the Proposed Action could likely still result in the temporary displacement of pronghorn from the project area and the 0.5-mi² buffer area (a total of 503 acres). However, the impacts would be less important because the area contains yearlong habitat, the animals would be under less stress than during a severe winter, and could easily move and find alternative areas for forage and cover. Therefore, the Proposed Action (if the construction phase does not occur during a severe winter) would have negligible impacts to the pronghorn population in the herd unit. Once construction operations have been completed, pronghorn would likely acclimate to human disturbance and utilize habitat at near pre-disturbance levels.

Mule deer and elk that may occur within the project area and the 0.5-mi² buffer area may be temporarily displaced to other suitable habitats due to the construction phase of the Proposed Action. If construction occurs during a severe winter, many of the mule deer and elk in the area will likely move to crucial winter range that is located approximately 1 mi southeast and 13 mi south of the project area, respectively. The Proposed Action would not have direct or indirect impacts on any crucial winter range for mule deer or elk. Once the 2-month construction phase

is completed, mule deer and elk would likely re-utilize the unaffected portion of the project area. Therefore, the construction phase of the Proposed Action would have negligible impacts on mule deer and elk populations.

Surveys of pronghorn, mule deer, and elk at SeaWest's Foote Creek Rim Wind Farm (located approximately 9 mi south of the project area) conducted from 1995 through 1998 during the operational phase of this project indicate that abundance and distribution of these species did not appear to be significantly affected by the presence of the 183 turbine wind farm (Johnson et al. 2000). Therefore, the addition of the Proposed Action next to the existing PRPA wind farm would have only negligible impacts on pronghorn antelope, mule deer, and elk during the operational phase of the project.

It is also possible the individual pronghorn, mule deer, and/or elk may be killed (an indirect impact) as a result of vehicular/animal collisions on the 5-mi segment of the Medicine Bow to Elk Mountain Road that would be associated with the Proposed Action. However, the anticipated level of traffic would be limited to less than 20 trips per day between the community of Medicine Bow and the project area during the construction phase and less than four trips per day during the operational phase of the project. Maintenance personnel would also occasionally visit the project facilities during the operational phase of the Proposed Action. The level of traffic during the operational phase of the project would be similar to that currently observed at the adjacent PRPA wind farm and would result in negligible impacts to pronghorn, mule deer, and elk.

Once the project has been terminated, the equipment decommissioned and removed, and reclamation and revegetation operations completed, pronghorn, mule deer, and elk would be able to re-utilize all areas affected by the Proposed Action.

Based upon the small amount of disturbance, the limited amount of vehicular traffic during the project, and the appropriate implementation of reclamation and revegetation procedures, the
Proposed Action would result in nonsignificant short- and long-term impacts to local pronghorn, mule deer, and elk populations.

4.8.1.2 Other Mammals

Impacts to other mammals due to the Proposed Action would include direct mortality during construction activities, especially to those that may take refuge in burrows that would be destroyed by project-related activities, and a potential increase in mortality from vehicle/animal collisions. The relatively small amount of wildlife habitat impacted by the Proposed Action would result in limited impacts to all wildlife species. Most small mammal species are relatively tolerant of human activity and likely would experience reduced populations in direct proportion to the amount of habitat destruction. This would be most likely true for species with relatively small home ranges (rodents, lagomorphs, etc.) and would be less applicable to more wide-ranging species such as coyote. Project impacts to small mammals would likely be masked by natural variations in populations due to weather, disease, and other natural factors.

According to Young et al. (2003), at least four bat species were found dead near wind turbines at SeaWest's Foote Creek Wind Farm located approximately 9 mi south of the project area. The majority--approximately 80%--were hoary bats, 9% were little brown bats, 8% were silver-haired bats, and 1% were big brown bats and 2% could not be identified. Most of the identified bat species likely nest and/or roost in aspen trees, cottonwood trees, and abandoned buildings located near the wind farm. The dead bats were found primarily between June and September, with most of the bats found during August. No bat carcasses were found associated with the lattice meteorological towers. Young et al. (2003) estimated annual mortality at 1.34 bats per wind turbine.

Bat mortality data collected by Young et al. (2003) at the Foote Creek Wind Farm (located approximately 10 mi south of the project area) were based on 69 600-kilowatt Mitsubishi wind turbines that are smaller that the proposed Clipper demonstration wind turbine. The Clipper demonstration wind turbine would also have other design and operational differences compared

to the Mitsubishi wind turbines. The Mitsubishi wind turbines have a rotor and blade diameter of 138 ft, while the Clipper demonstration wind turbine would have a rotor and blade diameter of 305 ft. The Mitsubishi wind turbines have a blade sweep area of 14,950 ft² compared to the sweep area of the Clipper demonstration wind turbine of 73,024 ft², an increase of almost five-fold.

Various factors likely influence the rate of bat and avian mortalities as a result of the operation of wind turbines such as blade sweep area, rotor speed, blade tip speed, height of the wind turbine, distance to topographic ridges, position of the individual turbine in the turbine string, weather, distance to suitable habitat, flying height of the specific species, etc. (Young et al. 2003). It should be noted that no bat or avian mortality studies have been conducted at the PRPA Medicine Bow Wind Farm (personal communication, October 20, 2004, with Paul Warila, PRPA, Fort Collins, Colorado). In order to compare potential bat moralities between the Mitsubishi wind turbine to the Clipper wind turbine, it is assumed that all factors are constant except for blade sweep area and that the rate of bat mortalities would be based solely upon a comparison of the blade sweep area for each wind turbine model. This approach would likely result in a worst-case scenario since there is limited suitable nesting or roosting habitat in the immediate project area compared to the Foote Creek Wind Farm. It should also be noted that bat mortalities were only recorded at approximately 70% of the monitored wind turbines at the Foote Creek Wind Farm (Young et al. 2003). Therefore, based on these assumptions, the proposed Clipper demonstration wind turbine would result in approximately 6.7 bat mortalities per year compared to 1.34 bat mortalities per year for the small Mitsubishi wind turbines. As a result, the Proposed Action is not expected to adversely impact any of the bat population in the area.

To document potential impacts to bat species, Clipper would conduct mortality surveys near the wind turbines and meteorological tower during the first summer season (June through September 2005) of operation of the Proposed Action. This period coincides with when bats typically utilize the general project area and when bat mortalities were documented at the Foote Creek Wind Farm (Young et al. 2003). Clipper would utilize mortality survey methods similar to those developed for the nearby Foote Creek Rim Wind Farm (Young et al. 2003). Personnel would

conduct one survey every 2 weeks, and each survey would involve walking transects established within 250 ft of each tower. Search transects would be set approximately 25-30 ft apart, and the searcher would walk at a rate of approximately 2 mph along the transect searching both sides approximately 12-15 ft for casualties out approximately 12-15 ft. It is estimated that it should require 0.75 hour to survey both towers. For each casualty identified, data recorded would include species, sex, and age (when possible), date and time collected, location collected, condition, and any comments that may indicate the time and cause of death. All carcasses located would be photographed as found and mapped. If the species information cannot be determined, the carcass would be bagged and transported to a qualified biologist for proper identification. At the end of the survey period, the data would be compiled, summarized, and submitted to the DOE, USFWS, and WGFD.

Rare habitats (e.g., springs, wetlands, and riparian areas) would not be impacted (because none occur in the project area), and applicant-committed practices to minimize impacts to wildlife would mitigate and reduce impacts to other animals. Therefore, the Proposed Action would not have any significant impacts on other mammal species.

4.8.1.3 Raptors

Direct impacts to raptors include mortality due to collisions with the wind turbine and meteorological tower. Other potential impacts to nesting raptors include decreased raptor reproductive success due to the physical disturbance of the nest or to increased human activities near the nest; destruction of nest, egg, and/or young; increased predation of the eggs or young; and impacts to hunting, foraging, and roosting habitat (National Wildlife Federation 1987) and all these would be illegal under the *Migratory Bird Treaty Act* (U.S.C. 703 [1918]). No raptor nests were documented within 1.0 mi of the project area; however, there are five raptor nests/eyries within 2.0 mi of the proposed project area (refer to Figure 3.6). There is no historic nest occupancy or productivity data from any of this nests/eyries. Given the distance from the project area to the nests, it is unlikely that individual nesting raptors or raptor populations would

be impacted by the Proposed Action; however, individual birds could be killed as a result of flying into the rotating wind turbine blades.

No site-specific raptor mortality studies have been conducted at the PRPA wind farm. A single dead golden eagle was found in 2003 near the one of the PRPA wind turbines and the incident was reported to the USFWS. No other raptor mortalities have been documented at the PRPA wind farm since the facility was constructed in 1998 (personal communication, October 28, 2004, with Bill Young, PRPA Wind Site Support Engineer, Medicine Bow, Wyoming).

According to Young et al. (2003), there were only five reported raptor mortalities (which accounted for 8% of the avian mortalities) between November 1998 and June 2002 (3.5 years) at the monitored portion of SeaWest's Foote Creek Wind Farm located approximately 9 mi south of the project area. The remaining 92% of the avian mortalities were passerine birds. Raptor mortalities were low during the study despite high raptor use estimates at the site. For example, no golden eagle mortalities were recorded during the study despite the fact that golden eagles accounted for approximately 40% of all raptor use of the area. On the other hand, use of the study area by American kestrels accounted for only 5% of the total raptor use, but accounted for 60% of the raptor carcasses found in the area. Five raptor carcasses were found--three American kestrels, one northern harrier, and one short-eared owl--during the 3.5-year study period. There were no recorded raptor mortalities associated with any of the meteorological towers. Young et al. (2003) estimated there was an average of 0.03 raptor mortalities per wind turbine per year.

Raptor mortality data collected by Young et al. (2003) at the Foot Creek Wind Farm (located approximately 10 mi south of the project area) were based on 69 600-kilowatt Mitsubishi wind turbines that are smaller that the proposed Clipper demonstration wind turbine. The Clipper demonstration wind turbine would also have other design and operational differences compared to the Mitsubishi wind turbines. The Mitsubishi wind turbines have a rotor and blade diameter of 138 ft, while the Clipper demonstration wind turbine would have a located of 14,950 ft² compared to the

sweep area of the Clipper demonstration wind turbine would be 73,024 ft² an increase of almost five-fold.

Various factors likely influence the rate of raptor mortalities as a result of the operation of wind turbines such as blade sweep area, rotor speed, blade tip speed, height of the wind turbine, distance to topographic ridges, position of the individual turbine in the turbine string, weather, distance to suitable habitat, flying height of the specific species, etc. (Young et al. 2003). It should be noted that no bat or avian mortality studies have been conducted at the PRPA Medicine Bow Wind Farm (personal communication, October 20, 2004, with Paul Warila, PRPA, Fort Collins, Colorado). In order to compare potential raptor mortalities between the Mitsubishi wind turbine to the Clipper wind turbine, it is assumed that all factors are constant except for blade sweep area and that the rate of raptor mortalities would be based solely upon a comparison of the blade sweep area for each wind turbine model. This approach would likely result in a worst-case scenario since there is limited suitable nesting or roosting habitat in the immediate project area compared to the Foote Creek Wind Farm. It should also be noted that avian mortalities were only recorded at approximately 67% of the monitored wind turbines at the Foote Creek Wind Farm (Young et al. 2003). Therefore, based on these assumptions, the proposed Clipper demonstration wind turbine would result in approximately 0.15 raptor mortalities per year compared to 0.03 raptor mortalities per year for the smaller Mitsubishi wind turbines. As a result, the Proposed Action is not expected to adversely impact any of the raptor populations in the area.

To document potential impacts to raptor species, Clipper would conduct mortality surveys near the wind turbine and meteorological tower during the first 12-month period of operation of the Proposed Action. Clipper would utilize mortality survey methods similar to those developed for the nearby Foote Creek Rim Wind Farm (Young et al. 2003). Personnel would conduct one survey every 2 weeks, and each survey would involve walking transects established within 250 ft of each tower. Search transects would be set approximately 25-30 ft apart, and the searcher would walk at a rate of approximately 2 mph along the transect searching both sides out approximately 12-15 ft for casualties. It is estimated that it should require 0.75 hour to survey each tower. For each casualty identified, data recorded would include species, sex, and age (when possible), date and time collected, location collected, condition, and any comments that may indicate the time and cause of death. All carcasses located would be photographed as found and mapped. If the species information cannot be determined, the carcass would be bagged and transported to a qualified biologist for proper identification. At the end of the survey period, the data would be compiled, summarized, and submitted to the DOE, USFWS, and WGFD. The USFWS would be notified immediately by telephone if carcasses of raptors or other species of concern were located at any time during turbine operation.

As described in Chapter 2.0 of the EA, electrical components of the Proposed Action would be designed, constructed, operated, and maintained in conformance with the *National Electrical Safety Code* and other applicable codes and standards. In addition, all aboveground electrical facilities would also be designed, constructed, operated, and maintained in accordance with *Suggested Practices for Raptor Protection on Powerlines: The State of the Art in 1996* (Avian Power Line Interaction Committee 1996). Implementation of these standards would reduce the risk of raptor electrocutions with powerline structures. The USFWS guideline recommend grouping wind turbines (i.e., avoid siting individual wind turbines) to reduce potential impacts to raptors and placing wind turbines away from ridges and away from prairie dog colonies (USFWS 2003). The Proposed Action complies with these guidelines.

Construction activities would disturb less than 10 acres; therefore, reductions in prey species abundance would be minimal and are not anticipated to adversely affect raptor populations. Foraging habitat for raptors within the project area would be reduced until revegetation successfully attracts small mammals and birds that serve as the prey base for the raptors. Therefore, the Proposed Action would not have any significant impacts on raptors.

4.8.1.4 Upland Game Birds

The Proposed Action would result in the disturbance of less than 10 acres of native vegetation; however, this amount of disturbance is unlikely to have an adverse affect on greater sage-grouse,

although it is possible the individual greater sage-grouse may be killed as a result of vehicular/bird collisions on the 5-mi segment of the Medicine Bow to Elk Mountain Road. However, the anticipated level of traffic would be less than 20 trips per day between the community of Medicine Bow, and the project area during the construction phase and less than four trips per day during the operational phase of the project. In addition, maintenance personnel would also occasionally visit the project facilities during the operational phase of the Proposed Action. The level of traffic during the operational phase of the project would be similar to that currently observed at the adjacent PRPA wind farm, and potential vehicle/bird collisions would result in negligible impacts to greater sage-grouse.

According to Young et al. (2003), no greater sage-grouse mortalities were recorded at either the wind turbines or meteorological towers during the 3.5-year monitoring period at SeaWest's Foote Creek Rim wind farm. Therefore, greater sage-grouse would not be impacted (by collisions with the meteorological tower or wind turbine).

Noise levels associated with the Proposed Action would likely increase from a maximum of 60 dBA (under windy natural conditions with the existing Medicine Bow Wind Farm) to 105 dBA with the addition of the proposed Clipper wind turbine. However, these noise levels would occur only during periods when the wind is blowing at least 18 mph and the wind turbine is operating. Male greater sage-grouse perform a courtship display in the early morning hours (typically before 8 a.m.) from March through May. Male greater sage-grouse strut, fan their tail feathers, and produce a popping sound by inflating and deflating air sacs in the neck to attract females. Yeo et al. (1984) determined that there was no decrease in greater sage-grouse lek attendance due to the construction or operation of a large wind turbine generators located near the Foote Creek Wind Farm. In addition, variations in lek attendance could not be directly attributed to the presence of the wind turbine generators (Yeo et al. 1984). Therefore, noise from the Proposed Action would likely have negligible impacts on greater sage-grouse.

The construction of the Clipper wind turbine could also adversely affect nesting of greater sagegrouse near the project area. After the courtship period, approximately two-thirds of the female greater sage-grouse nest within 3 mi of where they were bred (WGFD 2003a). Therefore, the project area and the existing Medicine Bow Wind Farm would be located within greater sage-grouse nesting habitat, and this area could have already been impacted by the construction and operation of the existing wind farm. Connelly et al. (2000) noted that nest success is better in areas where the greater sage-grouse nest in sagebrush that is between 16 and 32 inches tall; sagebrush that tall is not found within the project area. As a result, the Proposed Action would likely have negligible additional impacts on nesting greater sage-grouse.

To minimize potential impacts to active greater sage-grouse leks during the construction of the Proposed Action, Clipper would not conduct any surface-disturbing activities within 0.25 mi of any active lek during the greater sage-grouse mating season between February 1 and May 15. In addition, in order to minimize potential impacts to nesting greater sage-grouse, no surface-disturbing activities would be conducted within 2 mi of any active lek between April 1 and July 1 without permission from the WGFD. Reclamation activities would be conducted prior to April 1, unless prior permission is obtained from WGFD.

Mourning doves would likely be impacted in direct proportion to the amount of suitable habitat that is disturbed by the Proposed Action. There would be negligible impacts on mourning dove population because only 10 acres would be disturbed by the Proposed Action. In addition, Young et al. (2003) documented only one mourning dove mortality at either the wind turbines or meteorological towers during the 3.5-year monitoring period at SeaWest's Foote Creek Rim wind farm. This represents less than 0.5% of the total recorded mortalities.

4.8.1.5 Other Birds (Including Migratory Birds)

According to Young et al. (2003) passerine birds and other non-raptor species accounted for 92% of the avian mortalities recorded at wind turbines and 100% of the avian mortalities at metrological towers at the monitored portion of SeaWest's Foote Creek Wind Farm located approximately 9 mi south of the project area. A total of 37 species was killed and approximately half of the species were nocturnal migrants. For example, approximately 29% of the fatalities

were horned lark, 7% were vesper sparrow, 5% were chipping sparrow, and 5% were Brewer's sparrow. Species such as rock wren, house wren, Wilson's warbler, American robin, Townsend's warbler, green-trailed towhee, white-crowned sparrow, mountain bluebird, Lincoln's sparrow, cliff swallow, and brown creeper were documented between 2% and 4% of the total mortalities. The remaining 22 species each represented less than 2% of the total species mortalities documented at the Foote Creek wind farm.

Young et al. (2003) estimated that there was an average of 1.46 passerine mortalities per wind turbine per year and an average of 8.1 passerine mortalities per meteorological tower per year.

Passerine bird mortality data collected by Young et al. (2003) at the Foote Creek Wind Farm (located approximately 10 mi south of the project area) were based on 69 600-kilowatt Mitsubishi wind turbines that are smaller that the proposed Clipper demonstration wind turbine. The Clipper demonstration wind turbine would also have other design and operational differences compared to the Mitsubishi wind turbines. The Mitsubishi wind turbines have a rotor and blade diameter of 138 ft, while the Clipper demonstration wind turbine would have a rotor and blade diameter of 305 ft. The Mitsubishi wind turbines have a blade sweep area of 14,950 ft² compared to the sweep area of the Clipper demonstration wind turbine would be 73,024 ft², an increase of almost five-fold.

Various factors likely influence the rate of avian mortalities as a result of the operation of wind turbines, such as blade sweep area, rotor speed, blade tip speed, height of the wind turbine, distance to topographic ridges, position of the individual turbine in the turbine string, weather, distance to suitable habitat, flying height of the specific species, etc. (Young et al. 2003). It should be noted that no bat or avian mortality studies have been conducted at the PRPA Medicine Bow Wind Farm (personal communication, October 20, 2004, with Paul Warila, PRPA, Fort Collins, Colorado). In order to compare potential passerine bird mortalities between the Mitsubishi wind turbine to the Clipper wind turbine, it is assumed that all factors are constant except for blade sweep area and that the rate of bird mortalities would be based solely upon a comparison of the blade sweep area for each wind turbine model. This approach would likely

result in a worst-case scenario since there is limited suitable nesting or roosting habitat in the immediate project area compared to the Foote Creek Wind Farm. It should also be noted that avian mortalities were only recorded at approximately 67% of the monitored wind turbines at the Foote Creek Wind Farm (Young et al. 2003).

Therefore, based on these assumptions, the proposed Clipper demonstration wind turbine would result in approximately 7.3 passerine bird mortalities per year compared to 1.46 passerine bird mortalities per year for the smaller Mitsubishi wind turbines. The estimated number of passerine bird mortalities associated with the meteorological tower would be expected to be similar (8.1 passerine birds per year) to that documented by Young et al. (2003) at the Foote Creek Wind Farm. Therefore, the Proposed Action would likely result in approximately 15.4 passerine bird mortalities per year as a result of the meteorological tower and wind turbine.

To document potential impacts to passerine species, Clipper would conduct mortality surveys near the wind turbine and meteorological tower during the first 12-month period of operation of the Proposed Action. Clipper would utilize mortality survey methods similar to those developed for the nearby Foote Creek Rim Wind Plant (Young et al. 2003). Personnel would conduct one survey every 2 weeks, and each survey would involve walking transects established within 250 ft of each tower. Search transects would be set approximately 25-30 ft apart, and the searcher would walk at a rate of approximately 2 mph along the transect searching both sides out approximately 12-15 ft for casualties. It is estimated that is should require 0.75 hour to survey each tower. For each casualty identified, data recorded would include species, sex, and age (when possible), date and time collected, location collection, condition, and any comments that may indicate the time and cause of death. All carcasses located would be photographed as found and mapped. If the species information cannot be determined, the carcass would be bagged and transported to a qualified biologist for proper identification. At the end of the survey period, the data would be compiled, summarized, and submitted to the DOE, USFWS, and WGFD.

Additional impacts would probably occur in direct proportion to the amount of a species' habitat that would be disturbed. Some increased mortality would also be likely from bird collisions as a

result of increased vehicle traffic. Disturbance would be approximately 10 acres, and measures already described above to mitigate surface disturbances and project-related activities would minimize impacts to other bird species as well. Impacts to waterfowl and shorebirds would be minimal because few areas of suitable habitat would be affected and because these birds would temporarily move to adjacent habitats undisturbed by construction. Other birds would also move to suitable adjacent habitats. Therefore, the Proposed Action would not have any significant impacts on the populations of other birds (including migratory birds).

4.8.1.6 Amphibians, Reptiles, and Fish

Impacts to amphibians and reptiles due to the Proposed Action likely would occur in direct proportion to the amount of their habitat disturbed. Applicant-committed practices described in the Proposed Action to minimize surface disturbance and to ensure timely reclamation and stabilization would minimize project-related impacts to amphibians and reptiles. Some reptiles and amphibians could be killed in vehicle/animal collisions, but such impacts would be negligible. The applicant-committed practices described in the Proposed Action to minimize surface disturbance and ensure timely reclamation and stabilization would minimize projectrelated impacts to fish that occur in Medicine Bow River. Therefore, the Proposed Action would not have any significant impacts on amphibians, reptiles, and fish.

4.8.1.7 Summary

Direct impacts to wildlife would result from the direct loss of habitat due to the construction/installation of project-related facilities and vegetation compaction, displacement of wildlife due to disturbance by project-related activities, direct mortality due to construction- and operational-related activities, increased mortality due to poaching and harassment, and an increased likelihood of vehicle/animal collisions due to increased traffic. In addition, some avian individuals would be killed as a result of collisions with the rotating wind turbine blades or with the meteorological tower. No additional mitigation beyond those already included in the Proposed Action would be required. Despite the potential temporary displacement of big game

individuals during construction/installation of the Proposed Action and the mortalities of individual avian species during operation of the Proposed Action, the Proposed Action would not result in any significant impacts to wildlife populations.

4.8.2 No Action Alternative

Under the No Action Alternative, the DOE would not fund the Proposed Action, construction of the demonstration wind turbine and associated facilities would not occur, and wildlife (i.e., big game, other mammals, raptors, upland game birds, other birds, and amphibians, reptiles, and fish) populations would continue at present levels, with fluctuations due primarily to weather, disease, human impacts (e.g., the PRPA wind farm), and other natural causes.

4.8.3 Mitigation and Monitoring

No additional mitigation or monitoring is recommended beyond the applicant-committed practices identified in Chapter 2.

4.8.4 Residual Impacts

The Proposed Action would result in direct impacts such as disturbance of less than 10 acres of wildlife habitat, including crucial winter/yearlong range for pronghorn and the mortality of a limited number of individual raptors, bats, and passerine and other birds. Construction activities would occur over a 2-month period of time and reclamation and revegetation operations would be conducted upon the decommissioning and removal of the various project facilities and equipment. Some individual bird or animal species would be destroyed as a result of vehicle/animal collisions. In light of the fact that the Proposed Action would result in the addition of a single wind turbine and meteorological tower immediately adjacent to the existing PRPA wind farm, the Proposed Action would result in nonsignificant residual impacts to wildlife resources.

4.9 CUMULATIVE IMPACTS

Cumulative impacts result from the incremental impacts of an action that is added to other past, present, and reasonably foreseeable future actions, regardless of who is responsible for such actions. Cumulative impacts may result from individually minor, but collectively significant, actions occurring over a period of time (40 C.F.R. 1508.7). All environmental resources have been evaluated for cumulative impacts in accordance with DOE and CEQ policy (CEQ 1997).

The general project area has been utilized continuously for agricultural purposes (livestock grazing) and oil and gas development since the early 1900s. In addition, coal mining (the Carbon Basin surface and underground coal mine [approved but not operating]) and wind energy development projects (the existing Foote Creek and PRPA wind farms and the approved but not constructed Simpson Ridge wind farm) are present within the general project area. The Foote Creek Wind Farm currently has 183 wind turbines, and an additional 857 wind turbines have been authorized for construction but have not been constructed at the Simpson Ridge site (BLM 1995). There are also numerous paved and unpaved roads located within the general project area (including Interstate 80, U.S. Highway 30/287, State Highway 487, County Road 72, and the Medicine Bow to Elk Mountain Road). In addition, utility corridors (such as transmission and distribution powerlines and various natural gas pipelines) and the communities of Medicine Bow and Elk Mountain are also located within the general project area (refer to Figure 4.1). Despite these facilities, the natural environment within a major portion of the general project area remains largely unaffected by human-related activities, and the existing development does not appear to having any significant impacts on the existing environment.

There are no other large-scale industrial or commercial developments such as quarrying or mining operations, logging activities, oil and gas development activities, wind developments This figure is a separate file Fig 4-1.pdf.

Figure 4.1 Existing and Authorized Projects in the General Project Area.

(except for the PRPA Medicine Bow wind far), or other industrial developments within 3 mi of the project area. In addition, the DOE is unaware of any planned or reasonably foreseeable future actions within the general project area that would contribute any cumulative impacts.

The Proposed Action would involve the construction/installation, operation, and after 20 years the removal of a single 2.5-MW wind turbine, a 240-ft tall meteorological tower, a small service building, and associated underground powerlines and cables. The Proposed Action would be located immediately adjacent (within 800 ft) of PRPA's existing Medicine Bow Wind Farm. Within this facility, there are 10 large commercial wind turbines, two meteorological towers, a service building and out-buildings, powerlines, and a substation. There are no other existing, proposed, or planned commercial or industrial projects within the general project area. In addition, there are no plans for expansion of the Medicine Bow Wind Farm (personal communication, October 20, 2004, with Paul Warila, PRPA, Fort Collins, Colorado). It has been determined that cumulative impacts would not be significant because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA. Therefore, non-significant cumulative impacts to all environmental resources would be anticipated from the implementation of the Proposed Action.

4.10 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible and irretrievable commitment of resources is defined as a permanent reduction or loss of a resource that, once lost, cannot be regained. The primary irreversible and irretrievable commitment of resources due to the Proposed Action would be labor, materials, and energy expended utilized to construct the Proposed Action. Other irreversible and irretrievable commitments of resources would include soil lost through wind and water erosion; loss of productivity (i.e., forage and wildlife habitat) from lands involved in project; inadvertent or accidental destruction of unidentified cultural resources; and loss of animals due to mortality by collisions with vehicles, the meteorological tower, and the wind turbine.

4.11 SHORT-TERM USE OF THE ENVIRONMENT VERSUS LONG-TERM PRODUCTIVITY

For purposes of this EA, short-term use of the environment is that use during the life of the project (i.e., approximately 20 years), whereas long-term productivity refers to the period of time after the project has been decommissioned and the equipment has been removed and the area is reclaimed and stabilized. Short-term use of environment would not affect the long-term productivity of the proposed project area. After project has been completed, the equipment and facilities decommissioned and removed, and all disturbed areas reclaimed and stabilized, the same resources that were present prior to the project would be available. It may take 5-7 years after the project has been completed for some of the impacted and reclaimed areas to have vegetation cover and biodiversity comparable to predisturbance conditions. However, reclamation would eventually provide conditions to support wildlife and livestock. Use of the proposed project area for any purpose for which it was suitable prior to the project.

5.0 RECORD OF PERSONS, GROUPS, AND GOVERNMENTAL AGENCIES CONTACTED

Table 5.1Record of Persons, Groups, and Governmental Agencies Contacted.

| Company/Agency | Individual | Discipline/Position |
|---|----------------|--|
| Project Proponent – Clipper Windpower, Inc. | Tom Feiler | Project Manager |
| | Eli Bosco | Project Manager Leader |
| U.S. Fish and Wildlife Service, | Brian Kelly | Field Supervisor, Wyoming Field Office |
| Wyoming Office | Kathleen Erwin | Staff Biologist |
| State of Wyoming | | |
| Wyoming Department of Parks and Cultural Resources | Judy Wolf | Deputy State Historic Preservation Officer |
| Wyoming Department of | Barb Sahl | NPDES Storm Water Permit Specialist |
| Environmental Quality | | |
| Wyoming Game and Fish Department | Bill Wichers | Deputy Director |
| Wyoming Natural Diversity Database | Terra Dutcher | Database Specialist |

Table 5.2List of Preparers.

| Firm/Company | Name | EA Responsibility | | |
|----------------------------|------------------------|---|--|--|
| TRC Mariah Associates Inc. | Scott Kamber | Project Management, EA Preparation, and Quality Control | | |
| | James Lowe | EA Preparation-Cultural Resources | | |
| | Roger Schoumacher | EA Preparation-Quality Assurance | | |
| | Genial DeCastro | Document Production and Quality Control | | |
| | Tamara Linse | Technical Editing, Document Production | | |
| | Beth Rintz | Document Production | | |
| | Suzanne Luhr | CADD Specialist | | |
| Department of Energy | | | | |
| | Maureen Jordan | DOE/NREL Senior Environmental Scientist | | |
| | Steve Blazek | DOE/NREL NEPA Manager | | |
| | Roselle Drahushas-Crow | DOE NEPA Document Manager | | |
| | John Kersten | DOE Manager | | |
| | Kristin Kerwin | DOE NEPA Coordinator | | |
| | Alan Laxson | DOE/NREL Project Manager | | |
| | | | | |

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APPENDIX A: COPIES OF PUBLIC SCOPING LETTERS



Department of Energy

Golden Field Office 1617 Cole Boulevard Golden, Colorado 80401-3305

ERRATA

for the

ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED CLIPPER WINDPOWER, INC. LOW WIND SPEED TURBINE DEMONSTRATION PROJECT, CARBON COUNTY, WYOMING

Page 15

Paragraph 2, the first sentence is removed and replaced with the following:

"Construction equipment and personnel would access the project site south from Medicine Bow, via the Elk Mountain to Medicine Bow road to a series of existing unpaved private access/service roads located immediately adjacent to and within the Medicine Bow Wind Project (refer to Figure 2.2). Once equipment reaches the existing Medicine Bow Wind Project, traffic would travel on a service road located next to the existing wind turbines. To minimize vehicle traffic at the actual project site, construction employees would park at the PRPA control building parking lot and would be shuttled by other pickup trucks to the actual work site. No other access roads are available, would be constructed, or utilized to access the project area. Since the project requires only the construction/installation of one wind turbine, one meteorological tower, and associated facilities, the construction/installation phase of the Proposed Action would involve a limited amount of equipment and personnel. Typical construction equipment would include a road grader, trackhoe, front-end loader, concrete trucks, two cranes, a flatbed truck, rough-terrain forklift, trailer mounted electric generator, and two or three pickup trucks. Because of the remote location of the project area, not all equipment would be on-site at the same time and would only be brought to the site when required for specific tasks.

Construction and installation operations would begin with survey work that would be completed in approximately 2 days by surveyors with one pickup truck. The service building for the Proposed Action (i.e., trailer) would then be delivered and installed on site in approximately 1 day. Site preparation and excavation would then be conducted. Concrete would be delivered to the site from a small portable concrete batch plant that would be setup for 7 days in a previously disturbed area near the existing Medicine Bow Wind Project. The concrete supplier would immediately remove the batch plant upon completion of the concrete deliveries. The site preparation and excavation activities would be completed within 20 days. The wind turbine, meteorological tower, and associated equipment



would then be installed over a period of approximately 14 days. Nine round-trips would likely be required to transport the major components (e.g., tower, blades, nacelle, hub, etc) to the site. Final site grading and cleanup would then be conducted using available equipment.

Clipper anticipates that construction and installation operations would require a total of 2 to 3 round trips per day by pickup trucks used by supervisors from Medicine Bow to the project site. Construction/installation of the Proposed Action would require approximately 2 months to complete starting in January 2005, with activity levels fluctuating based on the tasks described above."

Page 21 After the last paragraph, insert the following new bulleted paragraphs:

- "To document raptor use of the immediate project area, Clipper would conduct surveys for raptors and other large birds utilizing methods and protocols presented in Thomas et al. (1997) and utilized at the nearby Foote Creek Rim Windpower Project (Johnson et al. 2000). The surveys would utilize observation circles (each with a 0.5-mi radius) that would be monitored during the first 12-month period of operation of the Proposed Action. All surveys would be conducted by qualified and trained biologists and detailed survey methods would be included in a survey protocol document that would be prepared for the project and submitted to DOE, USFWS, and WGFD for review and comment."
- "To document passerine bird use of the immediate project area, Clipper would conduct surveys for passerine and other small birds during the spring of 2005 utilizing methods and protocols utilized at the nearby Foote Creek Rim Windpower Project (Johnson et al. 2000). The surveys would utilize transect line(s) with point count stations established on the transect(s). These surveys would be conducted three times during the breeding season (May 15 though July 31) during the first 12-month period of operation of the Proposed Action. All surveys would be conducted by qualified and trained biologists and detailed survey methods would be included in a survey protocol document that would be prepared for the project and submitted to DOE, USFWS, and WGFD for review and comment."
- Page 61 Second paragraph, after second sentence, insert "The phased construction plan described under "page 15" above on this Errata would likely further minimize construction-related impacts to pronghorn by minimizing the level of construction activity on the site at any given time."

- Page 64 Second paragraph, second to last sentence ending with "wind turbine" insert the following "(refer to Table 4.1 for detailed information)" after the word "turbine."
- Page 64 After the second paragraph, insert the following new table.

| Project Area | Structure Type | Number of Mortalities per Structure | | |
|---|-------------------|--|--------------------|------|
| | | Raptors | Passerine Birds | Bats |
| Foote Creek Rim Windpower Project ¹ | Wind turbines | 0.03 | 1.46 | 1.34 |
| | Met towers | 0.00 | 8.10 | 0.00 |
| | Total | 0.03 | 9.56 | 1.34 |
| Proposed Action ² | Wind turbine | 0.15 | 7.30 | 6.70 |
| | Met tower | 0.00 | 8.10 | 0.00 |
| | Total | 0.15 | 15.40 | 6.70 |

Table 4.1 Measured and Estimated Wildlife Mortalities.

Based on average mortalities presented in Young et al. (2003) for a Foote Creek Rim project area that is located within 10 mi of the site of the Proposed Action.

² Estimates are based on the specifications of the Clipper demonstration wind turbine that has a blade sweep area five times larger than blade sweep area for the wind turbines located at the Foote Creek Rim Windpower Project. Therefore, for the purpose of this analysis mortalities for the Proposed Action are assumed to be 5 times greater than those documented at the Foote Creek Rim Windpower Project. The proposed meteorological tower would be similar in design to meteorological towers located at the Foote Creek Rim Windpower Project. The proposed Action are assumed to be 5 times greater than those documented at the Foote Creek Rim Windpower Project. The proposed meteorological tower would be similar in design to meteorological towers located at the Foote Creek Rim Windpower Project. The Proposed Action would include one wind turbine and one meteorological tower.

Page 64 After Table 4.1 insert the following:

"Results of raptor use surveys presented in the BLM (1995) and Johnson et al (2000) for the Foote Creek Rim project area, indicate that raptor use was lowest for areas that were located on top of the rim (i.e., away from the rim) on flat and open terrain (i.e., areas that are similar to the proposed project area)."

Page 64 last paragraph, last sentence starting with "Personnel would . tower" is removed and replaced with the following:

"The frequency of the mortality surveys would be based on the results of seasonal carcass removal survey conducted at the beginning of spring, summer, fall, and winter. The protocol for the carcass removal surveys would follow procedures described in Young et al. (2003). Each mortality survey would involve walking transects established within 325 ft of each tower. All surveys would be conducted by qualified and trained biologists and detailed survey methods would be included in a survey protocol document that would be prepared for the project and submitted to DOE, USFWS, and WGFD for review and comment."

- Page 67 Second paragraph, second to last sentence ending with "wind turbines" insert the following "(refer to Table 4.1 for detailed information)" after the word "turbines."
- Page 67 After the second paragraph, insert the following new paragraph.

"To document raptor use of the immediate project area, Clipper would conduct surveys for raptors and other large birds utilizing methods and protocols presented in Thomas et al. (1997) and utilized at the nearby Foote Creek Rim Windpower Project (Johnson et al. 2000). The surveys would utilize observation circles (each with a 0.5-mi radius) that would be monitored during the first 12-month period of operation of the Proposed Action. All surveys would be conducted by qualified and trained biologists and detailed survey methods would be included in a survey protocol document that would be prepared for the project and submitted to DOE, USFWS, and WGFD for review and comment."

Page 67 After the first paragraph, insert the following:

"Given the flat topography, lack of topographic features, and the lack of suitable nesting habitats and breeding areas for most raptors in the immediate project area, raptor use of the project area is expected to be less than that found at the Foote Creek Rim Windpower Project area. However, it is reasonable (and even conservative) to use the results of the Foote Creek Rim mortality surveys as the basis for estimating impacts to raptors from the Proposed Action."

Page 67 last paragraph, third sentence starting with "Personnel wouldtower" is removed and replaced with the following:

"The frequency of the mortality surveys would be based on the results of seasonal carcass removal survey conducted at the beginning of spring, summer, fall, and winter. The protocol for the carcass removal surveys would follow procedures described in Young et al. (2003). Each mortality survey would involve walking transects established within 325 ft of each

tower. All surveys would be conducted by qualified and trained biologists and detailed survey methods would be included in a survey protocol document that would be prepared for the project and submitted to DOE, USFWS, and WGFD for review and comment."

Page 68 After the first paragraph, insert the following:

"Migration routes are determined more by the availability of and changes in local food supplies than by any other environmental factor (Welty and Baptista 1988). Therefore, since food supplies for avian species within the project area are limited compared with other areas in the vicinity, the project area avian species would not likely be located within any local migratory corridors for raptors or passerine birds. While specific migratory movement patterns have not been determined for the project area, previous studies in the general area indicate that migratory routes appear to be strongly correlated to year-round avian use (BLM 1995; Johnson et al. 2003; Young et al 2003, Thomas et al. 1997). While some avian species may forage in the project area it is unlikely that they would spend much time in an area that produces limited opportunities for securing food sources (Welty and Baptista 1988). Therefore, impacts to migratory species would be less than significant and are unlikely to result in detrimental impacts to populations of any migratory bird."

Page 71 After the third paragraph, insert the following:

"Given the flat topography, lack of topographic features, and the lack of suitable nesting habitats and breeding areas for most passerine birds in the immediate project area, passerine bird use of the project area is expected to be less than that found at the Foote Creek Rim Windpower Project area. However, it is reasonable (and even conservative) to use the results of the Foote Creek Rim mortality surveys as the basis for estimating impacts to passerine birds from the Proposed Action."

- Page 72 Second paragraph, last sentence ending with "wind turbine" insert the following "(refer to Table 4.1 for detailed information)" after the word "turbine."
- Page 72 After the second paragraph, insert the following new paragraph.

"To document passerine bird use of the immediate project area, Clipper would conduct surveys for passerine and other small birds during the spring of 2005 utilizing methods and protocols utilized at the nearby Foote Creek Rim Windpower Project (Johnson et al. 2000). The surveys would utilize transect line(s) with point count stations established on the transect(s). These surveys would be conducted three times during the breeding season (May 15 though July 31) during the first 12-month period of operation of the Proposed Action. All surveys would be conducted by qualified and trained biologists and detailed survey methods would be included in a survey protocol document that would be prepared for the project and submitted to DOE, USFWS, and WGFD for review and comment."

Page 72 last paragraph, third sentence starting with "Personnel would .tower" is removed and is replaced with the following:

"The frequency of the mortality surveys would be based on the results of seasonal carcass removal surveys conducted at the beginning of spring, summer, fall, and winter. The protocol for the carcass removal surveys would follow procedures described in Young et al. (2003). Each mortality survey would involve walking transects established within 325 ft of each tower. All surveys would be conducted by qualified and trained biologists and detailed survey methods would be included in a survey protocol document that would be prepared for the project and submitted to DOE, USFWS, and WGFD for review and comment."

Page 72 After the third paragraph, insert the following:

"Migration routes are determined more by the availability of and changes in local food supplies than by any other environmental factor (Welty and Baptista 1988). Therefore, since food supplies for avian species within the project area are limited compared with other areas in the vicinity, the project area avian species would not likely be located within any local migratory corridors for raptors or passerine birds. While specific migratory movement patterns have not been determined for the project area, previous studies in the general area indicate that migratory routes appear to be strongly correlated to year-round avian use (BLM 1995; Johnson et al. 2003; Young et al 2003, Thomas et al. 1997). While some avian species may forage in the project area it is unlikely that they would spend much time in an area that produces limited opportunities for securing food sources (Welty and Baptista 1988). Therefore, impacts to migratory species would be less than significant and are unlikely to result in detrimental impacts to populations of any migratory bird."

Page 83 After the Steenhof reference, insert the following new reference:

"Thomas, D.M., J.M. Ward, and R. Pickering. 1997. Baseline Avian Studies for the Proposed SeaWest Energy Corporation Wyoming Wind Plant, TRC Mariah Associates, Laramie, Wyoming."

- Page 84 Before the Wyle laboratories reference, insert the following new reference:
 - "Welty, J.C., and L. Baptista. 1988. The Life of Birds, fourth edition. Saunders College Publishing, New York, New York. 581 pp + append."



Figure 1.1 Location of Project Area.



Figure 2.1 Layout of Medicine Bow Low Wind Speed Turbine Facilities.



Figure 2.2 Location of Existing Development near the Project Area.



Figure 2.3 Low Wind Speed Turbine.



Figure 2.4 Location of Underground Powerline.


Figure 3.1 Location of Project and PRPA Wind Turbines.



Figure 3.2 Surface Water Features near the Project Area.



Figure 3.3 Pronghorn Ranges near the Project Area.



Figure 3.4 Raptor Nest Locations near the Project Area.



Figure 3.5 Greater Sage-grouse Leks near the Proposed Project Area.



Figure 4.1 Existing and Authorized Projects in the General Project Area.

APPENDIX A:

COPIES OF PUBLIC SCOPING LETTERS



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services 4000 Airport Parkway Cheyenne, Wyoming 82001

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NOV 1 0 2004

In Reply Refer To: ES-61411/W.02/WY8800

John Kersten Department of Energy Golden Field Office 1617 Cole Boulevard Golden, Colorado 80401-3305

Dear Mr. Kersten:

This is regarding your October 21, 2004, notice of the proposed low-speed wind turbine demonstration project located in section 1, T21N, R79W in Carbon County, Wyoming. The project includes one 262-foot tall wind turbine and associated facilities such as a 240-foot tall meteorological tower, 400 square foot building, and underground electric lines. You have requested comments regarding this project to be used in the preparation of your environmental assessment.

Federal Agency Responsibilities

In response to the notice, the U.S. Fish and Wildlife Service (Service) is providing you with comments on (1) threatened, endangered and candidate species, (2) migratory birds, (3) wetlands and riparian areas, and (4) sensitive species, including petitioned species. The Service provides recommendations for protective measures for threatened and endangered species in accordance with the Endangered Species Act (Act) of 1973, as amended, 16 U.S.C. 1531 *et seq.* Protective measures for migratory birds are provided in accordance with the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703 and the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668. Wetlands are afforded protection under Executive Orders 11990 (wetland protection) and 11988 (floodplain management), as well as section 404 of the Clean Water Act. Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act, 48 Stat. 401, as amended, 16 U.S.C. 742a-742j.

The Department of Energy (DOE) and their non-federal representatives should work with the Service in developing surveys, impact minimization measures, and conservation measures for all federally listed species. If any proposed project may affect a listed species, consultation with the Service pursuant to section 7(a)(2) of the Act will be required. Section 7 (a)(1) of the Act directs federal agencies to utilize their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation and recovery of listed species. Therefore we encourage the DOE to incorporate measures into project design for the conservation of listed species.

In accordance with section 7 of the Act, my staff has determined that the following threatened or endangered species, or species proposed for listing under the Act, may be present in or near the project area. We would appreciate receiving information as to the current status of each of these species within the project area.

| SPECIES | STATUS | HABITAT | | |
|----------------------------|---------------|---|--|--|
| Bald eagle | Threatened | Found throughout state | | |
| (Haliaeetus leucocephalus) | | - | | |
| Black-footed ferret | Experimental | Shirley Basin/Medicine Bow | | |
| (Mustela nigripes) | /Nonessential | Reintroduction site | | |
| Ute ladies'-tresses | Threatened | Seasonally moist soils and wet | | |
| (Spiranthes diluvialis) | | meadows of drainages below 7000 feet elevation. | | |

If the proposed action may lead to consumptive use of water in the Colorado River System or the Platte River System, impacts to threatened and endangered species inhabiting the downstream reaches of these systems should be included in the evaluation.

| Colorado River fish | Endangered | Downstream riverine habitat of the Yampa, Green and Colorado river systems |
|----------------------|------------|---|
| Platte River species | Endangered | Downstream riverine habitat of the Platte River in Nebraska |

Bald eagle: While habitat loss still remains a threat to the bald eagle's full recovery, most experts agree that its recovery to date is encouraging. Adult eagles establish life-long pair bonds and build huge nests in the tops of large trees near rivers, lakes, marshes, or other wetland areas. Although bald eagles may range over great distances, they usually return to nest within 100 miles of where they were fledged. During winter, bald eagles gather at night to roost in large mature trees, usually in secluded locations that offer protection from harsh weather. Bald eagles often return to use the same nest and winter roost year after year.

In order to reduce potential adverse effects to the bald eagle, a disturbance-free buffer zone of 1 mile should be maintained around eagle nests and winter roost sites. Activity within 1 mile of an eagle nest or roost may disturb the eagles and result in take. The notice indicates that the wind turbine may be in existence for up to 20 years. The Service recommends that extensive site specific information be collected regarding the potential for bald eagles to use the project area or areas adjacent to it. We recommend that the wind turbine and associated facilities be sited to ensure implementation of an appropriate protective buffer for bald eagle nests and roost sites.

Black-footed ferret: Reintroduction of black-footed ferrets has occurred in the Shirley Basin/Medicine Bow Management Area (SBMB) in southeastern Wyoming (USFWS, 1991). The SBMB population is designated as experimental/non-essential according to provisions under section 10(j) of the Act and is treated as a proposed species. However, this designation indicates that the loss of the SBMB population will not jeopardize the continued existence of the black-footed ferret. The proposed project site is not located within the primary management zone for the SBMB population. However, the geographic boundaries of this population extend beyond the primary management zone to include areas of Wyoming that are south and east of the North Platte River in Natrona, Carbon and Albany Counties. If white-tailed prairie dog towns or complexes (primary prey species for ferrets) will be affected by this project we recommend that you contact this office for guidance on project analysis methodologies and/or ferret surveys.

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We encourage you to consider the extensive time and energy that has been expended to reintroduce ferrets to a small part of their historical range and that you exercise due care to ensure that black-footed ferrets are not negatively affected by this project. According to the Federal Register notice (USFWS, 1991) ferret injuries or mortalities are required to be reported immediately to the Service. There will be no penalties if it is determined that the injury or death was unavoidable, unintentional and did not result from negligent conduct.

Ute ladies'-tresses: Ute ladies'-tresses (Spiranthes diluvialis) is a perennial, terrestrial orchid, 8 to 20 inches tall, with white or ivory flowers clustered into a spike arrangement at the top of the stem. Spiranthes typically blooms from late July through August; however, depending on location and climatic conditions, it may bloom in early July or still be in flower as late as early October. Spiranthes is endemic to moist soils near wetland meadows, springs, lakes, and perennial streams where it colonizes early successional point bars or sandy edges. The elevation range of known occurrences is 4,200 to 7,000 feet in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows. Soils where Spiranthes have been found typically range from fine silt/sand, to gravels and cobbles, as well as to highly organic and peaty soil types. Spiranthes is not found in heavy or tight clay soils or in extremely saline or alkaline soils. Spiranthes seems intolerant of shade and small scattered groups are found primarily in areas where vegetation is relatively open. Surveys should be conducted by knowledgeable botanists trained in conducting rare plant surveys. Spiranthes is difficult to survey for primarily due to its unpredictability of emergence of flowering parts and subsequent rapid desiccation of specimens. The Service does not maintain a list of "qualified" surveyors but can refer those wishing to become familiar with the orchid to experts who can provide training or services.

Colorado River water depletions: Formal consultation is required for projects that may lead to depletions of water to the Colorado River system. Federal agency actions resulting in water depletions to the Colorado River system may affect the endangered Bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), Humpback chub (*Gila cypha*), and Razorback sucker (*Xyrauchen texanus*) downstream in the Green and Colorado river systems. In addition, depletions may contribute to the destruction or adverse modification of designated critical habitat for these four species.

In general, depletions include evaporative losses and/or consumptive use of surface or groundwater within the affected basin, often characterized as diversions less return flows. Project elements that could be associated with depletions include, but are not limited to, ponds (detention/recreation/irrigation storage/stock watering), lakes (recreation/irrigation storage/municipal storage/power generation), reservoirs (recreation/irrigation storage/municipal storage/power generation), hydrostatic testing of pipelines, wells, dust abatement, diversion structures, and water treatment facilities. Any actions that may result in a water depletion should

be identified. The document should include: an estimate of the amount and timing of average annual water use (both historic and new uses) and methods of arriving at such estimates; location of where water use or diversion occurs as specifically as possible; if and when the water will be returned to the system; and what the water is being used for. Note that if the project has peculiarities or oddities, the Service may have more specific questions regarding the potential consumptive use of water.

Platte River water depletions: Water depletions to the Platte River system may affect the federally listed whooping crane (Grus americana), interior least tern (Sterna antillarum), piping plover (Charadrius melodus), pallid sturgeon (Scaphirhynchus albus), bald eagle (Haliaeetus leucocephalus), Eskimo curlew (Numenius borealis), and western prairie fringed orchid (Platanthera praeclara). In addition, depletions may contribute to the destruction or adverse modification of designated critical habitat for the whooping crane and the northern Great Plains breeding population of the piping plover. Depletions include evaporative losses and/or consumptive use, often characterized as diversions from the Platte River or its tributaries less return flows. Project elements that could be associated with depletions to the Platte River system include, but are not limited to, ponds (detention/recreation/irrigation storage/stock watering), lakes (recreation/irrigation storage/municipal storage/power generation), reservoirs (recreation/irrigation storage/municipal storage/power generation), created or enhanced wetlands, hydrostatic testing of pipelines, wells, diversion structures, dust abatement, and water treatment facilities. Any actions that may result in a water depletion to the Platte River system should be identified. The document should include: an estimate of the amount and timing of average annual water use (both historic and new uses) and methods of arriving at such estimates; location of where water use or diversion occurs as specifically as possible; if and when the water will be returned to the system; and what the water is being used for. Note that if the project has peculiarities or oddities, the Service may have more specific questions regarding the potential consumptive use of water.

Candidate Species

The Service has determined that sufficient information exists to propose the western boreal toad (*Bufo boreas boreas*) as a candidate species for listing under the Act. However, the proposal to list is currently precluded by higher priority listing actions. The boreal toad occurs in the mountains of southeast Wyoming. Many federal agencies have policies to protect candidate species from further population declines. We would appreciate receiving information on the status of this species in or near the project area. In addition, if the boreal toad is listed prior to completion of the project, unnecessary delays may be avoided by considering project impacts to candidates now.

Sensitive Species

Federal agencies are also encouraged to consider sensitive species or species at risk in project review. Your consideration of these species is important in preventing their inclusion on the Endangered Species List. The Wyoming Natural Diversity Database maintains the most current information on sensitive plants in Wyoming. The database must charge for data retrieval to financially support the database and staff. The staff can be contacted at (307) 766-5026.

Migratory Birds

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Under the MBTA and the BGEPA, the DOE has a mandatory obligation to protect the many species of migratory birds, including eagles and other raptors that may be affected by projects under their authority. The MBTA, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations and does not require intent to be proven. Section 703 of the Act states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, or possess ... any migratory bird, any part, nest, or eggs of any such bird..." The BGEPA, prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing.

The Service recommends that the DOE use the best available technologies to determine if migratory birds will be negatively affected by the proposed project. This may entail surveys, review of data from the adjacent wind farm, breeding bird survey data, and contacting other agencies or birding groups before the project moves forward. In addition to surveys for avian species we suggest your surveys include bats as well.

In order to promote the conservation of migratory bird populations and their habitats, the Service recommends the DOE implement those strategies outlined within the Memorandum of Understanding directed by the President of the U.S. under the Executive Order 13186, where possible.

Sage Grouse

The Service has received several petitions to list the greater sage-grouse (*Centrocercus urophasianus*) under the Act. The causes for the greater sage-grouse rangewide decline are not completely understood and may be influenced by local conditions. However, habitat loss and degradation, as well as loss of population connectivity are important factors (Braun 1998, Wisdom et al. 2002). Greater sage-grouse are dependent on sagebrush habitats year-round. Therefore, any activities that result in loss or degradation of sagebrush habitats that are important to this species should be closely evaluated for their impacts to sage grouse. If important breeding habitat (leks, nesting or brood rearing habitat) is present in the project area, the Service recommends no project-related disturbance between March 1 and June 30, annually. Minimization of disturbance during lek activity, nesting, and brood rearing is critical to sage grouse survival.

We recommend you contact the Wyoming Game and Fish Department to identify important greater sage-grouse habitats within the project area, and appropriate mitigative measures to minimize potential impacts from the proposed project. The Service recommends surveys and mapping of important greater sage-grouse habitats where local information is not available. The results of these surveys should be used in project planning, to minimize potential impacts to this species. No project activities that may exacerbate habitat loss or degradation should be permitted in important habitats.

Wetlands and Riparian Areas

The Service recommends measures be taken to avoid wetland losses in accordance with Section 404 of the Clean Water Act, Executive Order 11990 (wetland protection) and Executive Order 11988 (floodplain management) as well as the goal of "no net loss of wetlands." If wetlands may

be destroyed or degraded by the proposed action, those (wetlands) in the project area should be inventoried and fully described in terms of functions and values. Acreage of wetlands, by type, should be disclosed and specific actions outlined to minimize impacts and compensate for all unavoidable wetland impacts. Project components of seismic actions that may have potential negative impacts to wetlands and riparian areas may occur from vehicular traffic through these sensitive areas resulting in erosion and degradation of vegetation.

We appreciate your efforts to ensure the conservation of endangered, threatened, and candidate species and migratory birds. If the scope of the project is changed, or the project is modified, in a manner that you determine may affect a listed species, this office should be contacted to discuss consultation requirements pursuant to section 7(a)(2) of the Act. If you have further questions regarding our comments or your responsibilities under the Act, please contact Kathleen Erwin at 307-772-2374 extension 28 for wind power projects proposed within Wyoming.

Sincerely,

Brian T. Kelly Field Supervisor Wyoming Field Office

References

- Braun, C.E. 1998. Sage grouse declines in western North America: What are the problems? Proceedings of the Western Association of Fish and Wildlife Agencies 78:139-156
- U.S. Fish and Wildlife Service. 1989. Black-footed ferret survey guidelines for compliance with the Endangered Species Act, April 1989. U.S. Fish and Wildlife Service, Denver, Colorado and Albuquerque, New Mexico. 15pp.
- U.S. Fish and Wildlife Service. 1991. Endangered and threatened wildlife and plants: establishment of a nonessential experimental population of black-footed ferrets in southeastern Wyoming. Federal Register/ Vol. 56, No. 162/ Wednesday, August 21, 1991 (41473).
- Wisdom, M.J., B.C. Wales, M.M. Rowland, M.G. Raphael, R.S. Holthausen, T.D. Rich, and V.A. Saab. 2002. Performance of Greater Sage-Grouse models for conservation assessment in the Interior Columbia Basin, USA. Conservation Biology16: 1232-1242.

Enclosure (1)

cc:

TRC, Environmental Consultant, Laramie (S. Kamber) WGFD, Lander, Non-Game Coordinator (B. Oakleaf) WGFD, Cheyenne, Statewide Habitat Protection Coordinator (V. Stelter)



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services 4000 Airport Parkway Cheyenne, Wyoming 82001

In Reply Refer To: ES-61411/BFF/WY7746

February 2, 2004

Dear Interested Party:

This letter is to inform you that black-footed ferret (*Mustela nigripes*) surveys are no longer necessary in black-tailed prairie dog colonies statewide or in white-tailed prairie dog towns except those noted in the attachment. In response to requests from numerous entities and our own review of the situation regarding ferret surveys, the U.S. Fish and Wildlife Service (Service) and others have been evaluating the potential for a previously unidentified black-footed ferret population to occur in Wyoming and the need for conducting black-footed ferret surveys across the entire state. This issue has been especially pertinent when evaluating various activities for compliance with the Endangered Species Act of 1973 (Act), as amended (16 USC 1531 et seq).

The black-footed ferret was listed as an endangered species in 1967, prior to the Act (under the Endangered Species Preservation Act of 1966). The Act prohibits the take of listed species without proper permits and places an additional requirement on activities funded, authorized or carried out by Federal agencies to ensure that such actions will not jeopardize the continued existence of any listed species. The latter process is known as interagency consultation and is outlined in section 7(a)(2) of the Act (50 C.F.R. § 402.13).

The Service developed the 1989 Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act (Survey Guidelines) to assist with section 7 consultations for ferrets. The Survey Guidelines provide a mechanism to evaluate the possibility of locating existing ferrets in prairie dog colonies by examination of the size, density, and juxtaposition of existing prairie dog colonies. The key points of the strategy are to determine the existence of ferrets or an area's potential for ferret recovery and either may be used in section 7 consultations when determining whether an action may affect the black-footed ferret. The Survey Guidelines can be followed by interested parties (federal agencies and their partners) during the section 7 consultation process to make determinations on whether an activity may adversely affect ferrets. However, an unintended drawback to the Survey Guidelines is that repetitive surveys may be undertaken to evaluate possible impacts to ferrets on prairie dog colonies that have already been searched or that didn't present any realistic opportunities for ferret reintroduction.

The Service has been coordinating with the Wyoming Game and Fish Department in reviewing information about the current and historic status of prairie dog towns throughout Wyoming. In addition to the status review, we have also been reviewing the history of black-footed ferret surveys to determine whether the survey guidelines should continue to be applied across the entire state. Through this process, the Service has developed an initial list of blocks of habitat that are not likely to be inhabited by black-footed ferrets. In these areas, take of individual ferrets and effects to a wild population are not an issue and surveys for ferrets are no longer recommended. The term "block clearance" has often been used to describe this type of approach. This initial list is based largely on the quality of the habitat today, as well as information regarding past population bottlenecks that may have resulted from plague and poisoning events in particular areas and may have led to the loss of ferrets in the area.

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Additional information regarding the survey effort on the specific areas not yet block-cleared is currently being reviewed by the Service. Based on this review, the Service will likely add several blocks of habitat to the list in the future. The Service will continue to collect and review information on any remaining areas to determine if they should be added to the list of areas cleared from the survey recommendation. Therefore, prior to conducting surveys, you s² culd coordinate with the Service to determine which specific areas are recommended for surveys. We have attached our initial list of areas cleared from the ferret survey recommendation. We believe this approach is not only biologically defensible, but also allows all parties involved to focus survey effort and resources on those areas where the likelihood of discovering wild ferrets is greatest.

Please note that "block clearance" must not be interpreted to mean that the area is free of all value to black-footed ferrets. These areas, or blocks, are merely being cleared from the need for ferret surveys. Therefore, this clearance from the survey recommendations reflects only the negligible likelihood of a wild population of ferrets occurring in an area. It does not provide insight into an area's value for survival and recovery of the species through future reintroduction efforts. Nor does this clearance relieve a Federal agency of its responsibility to evaluate the effects of its actions on the survival and recovery of the species. For example, while an action proposed in a cleared area needs no survey and is not likely to result in take of individuals, the action could have an adverse effect upon the value of a prairie dog town as a future reintroduction site and should be evaluated to determine the significance of that effect. Consultation with the Service is appropriate for any agency action resulting in an effect significant enough to diminish a site's value as a future reintroduction site. Additionally, block clearance of an area does not imply that other values of maintaining the integrity of the prairie dog ecosystem are unimportant.

We appreciate your efforts to conserve listed species. Without the valuable information collected to date in association with black-footed ferret surveys, we would not be able to undertake this effort to focus ferret surveys on the most promising habitat. If you have any questions regarding

this letter or your responsibilities under the Act, please contact Mary Jennings of my staff at the letterhead address or phone (307) 772-2374, extension 32.

Sincerely,

Brian T. Kelly Field Supervisor Wyoming Field Office

Enclosure (1)

cc: WGFD, Non-Game Coordinator, Lander, WY (B. Oakleaf) FWS, BFF Recovery Coordinator, Laramie, WY (M. Lockhart) Attachment

Black-footed Ferret Survey Block Clearance List

The following blocks of black-footed ferret habitat are cleared from the recommendation for ferret surveys:

1. All black-tailed prairie dog towns in Wyoming

2. All white-tailed prairie dog towns in Wyoming EXCEPT those identified in the following table.

| Complex Name | Townships | Ranges | Complex Name | Townships | Ranges |
|--------------------|---------------------------------|--|----------------|--|---|
| Baxter Basin | T18,T19, T20 | R103, R104 | Fifteen Mile | T47-T49 T48 | R97, R98 R96 (west half) |
| Big Piney | T 28 T29, T30, T31 | R111, R112 R109-R111 | Flaming Gorge | T12, T13 T12-T14 T13 | R109 R108 R107 |
| Bolton Ranch | T17 T18, T19 | R86, R88 R86-R88 | Manderson | T47, T48 T49 | R90, R91 R91 |
| Carter | T16, T17 T18 | R114-R116 R115 | Моха | T15, T16 T17, T18 T19, T20 T21 T22, T23 T24 | R112, R113 R111-R113 R111-R114 R110-R113 R111-R113 R111-R113 R112 |
| Continental Divide | T16 T17 T18 T19 T20 | R93-95 R92-95, 98-100, 97-98 R92-96, 98-99 R92-96 R92-95 | Pathfinder | T27 T28 T29 | R85, R86 R85-R89 R85, R89 |
| | T16 T17-T19 T19, T20 | R118 R117 R116 | Saratoga | T14 T15 T16 | R82, R83 R82-R84 R83-R85 |
| | T15, T16 T17 | R90-R93 R92, R93 | Seminoe | T23, T24 | R84, R85 |
| Desolation Flats | T13 T14 T15 T16 | R93-95 R93-94 R93-94, 96 R93-96 | Shamrock Hills | T22, T23 T24, T25 T26 | R89, R90 R89 R89, R90 |



Natural Resources Conservation Service Federal Building 100 East B Street, Room 3124 P.O. Box 33124 Casper, WY 82602

Date: November 2, 2004

Department of Energy Golden Field Office 1617 Cole Boulevard Golden, Colorado 80401-3305

NOV 8 RECD

Dear Mr. Kersten,

The Natural Resources Conservation Service has reviewed proposed project for the Low-Speed Wind Turbine Demonstration Project near Medicine Bow, Wyoming.

The only comments on the project that we have is that there is no information relating to how ground disturbance in building the tower, buildings and installation of the underground cables is going to be handled. How will any potential wind and or water erosion be addressed? How will the disturbed areas be revegetated? The NRCS has no other concerns with the project outside of those we identified earlier.

If you have any questions, or need to discuss this comment with us, please contact either myself at 307-233-6750 or please contact Doug Gasseling, Conservation Agronomist, Cheyenne, Wyoming, at 307-772-2320, ext. 101.

Sincerely,

LINCOLN "ED" BURTON State Conservationist

----Original Message----From: Mike_Robinson@blm.gov [mailto:Mike_Robinson@blm.gov] Sent: Tuesday, November 09, 2004 9:09 AM To: Drahushak-Crow, Roselle Subject: DOI BLM Rawlins Field Office Comments

Hello; The staff at the Rawlins Field Office have reviewed your proposal and the following issues were identified in the area: - The project is within Antelope Critical Winter Range

- Greater Sage Grouse: Also within 600 meters of one lek and 900 meters of satellite lek - both active.

From a Realty standpoint, the project is on private land and therefore will not affect public lands. Wildlife are a State governed right therefore needs to be addressed and these concerns are reflect in the above issues, but the BLM has no rights to govern/interpret private land.

Thank you for you request, and feel free to contact myself for any further information or requests concerning this project.

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Mike Robinson Realty Specialist BLM Rawlins Field Office Phone: (307) 328-4389 Fax: (307) 328-4224

WYOMING GAME AND FISH DEPARTMENT



"Conserving Wildlife - Serving People"

November 10, 2004

WER 10988 Department of Energy National Renewable Energy Laboratory Scoping Clipper WindPower Low-Speed Wind Turbine Demonstration Project Carbon County

Roselle Drahushak-Crow NEPA Document Manager U.S. Department of Energy, Golden Field Office 1617 Cole Blvd. Golden, CO 80401-3393

Dear Ms. Drahushak-Crow:

The staff of the Wyoming Game and Fish Department has reviewed the Clipper Windpower Inc. Low-Speed Wind Turbine Demonstration Project near Medicine Bow, Wyoming. We offer the following comments.

Wildlife habitat diversity in the general area is high, with primary components including big sagebrush, black greasewood, Nuttall saltbush, willow/cottonwood riparian, shortgrasses, rock outcrops, Ponderosa pine/juniper, playas, and wet meadows. Wildlife using these habitats frequently moves through the proposed project area. The nearby Medicine Bow River and East Allen Lake attract several species of waterfowl, shorebirds, and other species.

The project occurs within or near the following crucial and important wildlife habitats:

- Crucial winter/yearlong range for pronghorn.
- Winter/yearlong range for mule deer (about 1 mile from crucial winter/yearlong range).
- The project occurs within a lek complex for sage grouse, a species petitioned for listing under the Endangered Species Act.
- Bald eagle, golden eagle, red-tailed hawk, ferruginous hawk, rough-legged hawk, Swainson's hawk, northern harrier, prairie falcon, kestrel, great horned owl, and

Headquarters: 5400 Bishop Boulevard, Cheyenne, WY 82006-0001 Fax: (307) 777-4610 Web Site: http://gf.state.wy.us burrowing owl potentially occur in the project vicinity. Specifically, bald eagle, golden eagle, red-tailed hawk, ferruginous hawk, Swainson's prairie falcon, kestrel, and great horned owl are known to nest in the surrounding area. We have not conducted any recent nesting surveys in the immediate project area.

- Several other migratory birds occur in the vicinity, including mountain plover, sandhill crane, Canada geese, and a variety of other waterfowl, shorebirds, and wading birds.
- Bobcat, red fox, swift fox, coyote, skunk, weasel, and badger are some of the carnivores in the area.
- White-tailed prairie dogs, Wyoming ground squirrels, least chipmunk, desert cottontail, white-tailed jackrabbit, and a variety of bats are some of the common smaller mammals in the area.
- Historically, black-footed ferrets were sighted in the general vicinity.

We offer the following comments regarding this proposed project and the EA:

- 1. Considerations include siting, wildlife impacts, baseline inventories, monitoring, and mitigation.
- 2. The EA should address cumulative impacts, including nearby existing and proposed wind plants, proposed and past coal mining, oil and gas (including CBM) development, and habitat alterations such as sagebrush control efforts. Determination of the effects of a potential commercial low-speed wind farm should be addressed, in the event the demonstration project is expanded.
- 3. The EA should address consideration of alternate sites, particularly if there are suitable locations with fewer potential environmental conflicts (e.g., outside of crucial winter range or sage grouse habitat, lower potential for avian and bat mortalities). If the objective is to demonstrate electrical generation at lower wind speeds, other less windy locations may serve that purpose with less potential impacts.
- 4. A considerable amount of information concerning wildlife impacts has been gathered for the adjacent existing wind farm. We recommend these be reviewed and referenced in the EA.
- 5. This proposed project is located in the same section as a sage grouse lek complex. There are two leks associated with this complex. Although we have not documented activity on these leks in recent years, our monitoring has been inconsistent. Because sage grouse have been petitioned for federal listing, we recommend monitoring be initiated by the project proponents prior to development of the site, in order to determine site use. If sage

Ms. Roselle Drahushak-Crow November 10, 2004 Page 3 – WER 10988

> grouse leks remain active, appropriate mitigation should be developed for any foreseeable disturbances to the birds.

- 6. In the EA, the design and characteristics of the proposed low-speed wind turbine should be contrasted with other existing designs, including height of rotor-swept area, blade tip speeds, and potential for wildlife mortalities. These features should be described in terms of their effect on wildlife mortalities.
- 7. We recommend that construction activities cease from November 15 to April 30 to minimize disturbance to crucial pronghorn winter range during the winter period.
- 8. Appropriate timing limitations and buffers should be applied for any raptor nests identified on or near the project area.
- 9. The project should monitor wildlife mortalities using accepted protocols in place at the adjacent wind farm, and use the same reporting format.

These comments are also being provided to TRC Mariah, who are gathering information on behalf of Clipper Windpower Inc., and to the Carbon County Planning Commission for their use in considering a land use zoning change. We thank all parties for the opportunity to provide comments, and encourage you to include us in future actions involving this project.

Sincerely,

1, Withers

BILL WICHERS DEPUTY DIRECTOR

BW:VS:as Mary Flanderka-Governor's Planning Office cc: **USFWS TRC** Mariah **Carbon County Planning Commission**

November 8, 2004

TO: Roselle Drahushak-Crow, NEPA Document Manager
 U.S. Department of Energy, Golden Field Office
 1617 Cole Blvd.
 Golden, Colorado 80401-3393

Dear: Roselle:

The Medicine Bow Conservation District appreciates the opportunity to provide input for the scoping process concerning the Environmental Assessment (EA) for the Clipper Windpower Inc. Low Speed Turbine Demonstration Project. The Medicine Bow Conservation District operates under and is guided by legislative declarations and policy of the Wyoming State Legislature W.S. 11-16-103 et al. The Board of Supervisors, a group of locally elected individuals, held discussion concerning the proposed actions outlined in the EA. The Board finds no reason for concern with the proposed project as outlined. The Board does however wish to convey the following policies concerning activities within the districts legal boundaries:

- A. The Medicine Bow Conservation District supports the "Multiple Use" concept of management of federal lands within the boundaries of the district. Multiple uses shall include but are not limited to the following:
 - a. Timber harvesting
 - b. Grazing
 - c. Recreation
 - d. Oil and Gas Development
 - e. Mineral Development
 - f. Wind Power Development
 - g. Hydro-Electric Development
- B. The Medicine Bow Conservation District reserves the right to review and make recommendations on all sub division plans within the boundaries of the district to the Carbon County Commissioners and the Carbon County Planning and Zoning Board.
- C. The Medicine Bow Conservation District requires only certified hay or straw to be used as mulch on reclamation projects on any county road, state or federal highway project, or any reclamation project on lands owned or managed by the state of Wyoming or the Federal Government.

- D. The Medicine Bow Conservation District requires that all owners of Easements and or rights-of-way for power lines, above or below ground transmission lines, road ways, oil and gas exploration, pipeline and development sites, wind farms and mineral exploration and extraction sites shall be solely responsible for all control of noxious weeds until full establishment of perennial grass cover is established meeting the satisfaction of the private landowner, lessee or federal manager.
- E. The Medicine Bow Conservation District supports local, state and federal agencies in requiring proper construction, maintenance and reclamation of transportation corridors such as, but not limited to, access roads, pipelines, and transmission lines to prevent resource degradation.
- F. The Medicine Bow Conservation District will not support any action that results in a net loss of Animal Unit Months (AUM's) on any allotment, permit or lease on lands owned or managed by the state of Wyoming or the Federal Government.
- G. The Medicine Bow Conservation District of Supervisors reserves the right to appeal local, state, and federal decisions that adversely affect the Medicine Bow Conservation District Natural Resource and Land Use Plan.

Thank you again for the opportunity to provide our input to the NEPA process. If there are any questions please contact the district directly.

Sincerely,

Brad Holliday District Manager, Medicine Bow Conservation District PO Box 6 510 Utah Medicine Bow, WY 82329 Email: <u>mbcd@trib.com</u> Phone: (307) 379-2221 Fax: (307) 379-2224



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services 4000 Airport Parkway Cheyenne, Wyoming 82001

In Reply Refer To: ES-61411/W.35/WY9079

JAN 06 2004

JAN 1 0 RECD

Steve Blazek, NEPA Compliance Officer Department of Energy Golden Field Office 1617 Cole Boulevard Golden, Colorado 80401-3393

Dear Mr. Blazek:

This letter is in response to your December 22, 2004, Draft Environmental Assessment, received in our office on December 27, for the proposed low-speed Clipper wind turbine demonstration project located in section 1, T21N, R79W in Carbon County, Wyoming. The project includes one 262-foot tall wind turbine and associated facilities including a 240-foot tall meteorological tower (lattice-guyed type), 400 square foot building, and underground electric lines. Our office previously provided scoping comments for this project in our letter of November 10, 2004 (WY8927). We appreciate the opportunity to provide you with the following comments based on our review of the Draft Environmental Assessment (DEA).

General Comments

The U.S. Fish and Wildlife Service (Service) understands the need to determine the economic and technical feasibility of the Clipper wind turbine design in order to explore possible opportunities for reducing costs over current wind turbine configurations. However, we strongly encourage the Department of Energy (DOE) to incorporate measures to avoid and/or minimize effects to wildlife and their habitats. These efforts should be an integral part of project planning. To assist in project planning the Service has issued *Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Turbines* (Guidance). The Guidance document can found at the following website http://www.fws.gov/r9dhcbfa/wind.pdf.

Although the Guidance is strictly voluntary, it can assist industry in avoiding and/or minimizing impacts to wildlife and their habitats through (1) evaluation of potential Wind Resource Areas (WRAs), (2) determining proper location and design of turbines and associated structures within WRAs selected for development, and (3) conducting pre and post-construction research studies and monitoring to identify and/or assess impacts to wildlife. For your information, the Guidance is based on current science and will be updated as new information becomes available.

We encourage the DOE and its non-federal representatives to follow the Guidance and, in cooperation with the Service, to conduct science-based research to provide the necessary information on the impacts of wind energy development on wildlife and their habitats. We further encourage the DOE to look for opportunities to promote wildlife conservation through compliance with the *Fish and Wildlife Service Mitigation Policy* (Federal Register 46 (15), January 1981). The mitigation policy follows the steps recommended in the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act to avoid, minimize or compensate for negative impacts. Mitigation may involve (1) taking no action, (2) limiting the degree of the activity, (3) repairing, rehabilitating, or restoring an affected environment, and (4) acquiring replacement habitat and/or conservation easements.

It is important to note that mitigation does not apply to "take" of species protected under the Endangered Species Act (Act) of 1973, as amended, 16 U.S.C. 1531 *et seq.*, Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, and/or the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668.

Specific Comments

<u>Page ii, Executive Summary</u>: The DEA states that the wind energy company will monitor impacts to bats and avian species by conducting mortality surveys during the first 12 months of operation of the Clipper wind turbine. *Determining post-construction survey and monitoring needs should be based on the results of the pre-construction baseline surveys. Monitoring effort may be cursory in areas where recorded pre-construction use by bats and/or avian species is low. However, it may be necessary to conduct intensive monitoring in areas of documented high use. For this reason the Service recommends that the company collect pre-construction baseline wildlife information to evaluate the site for its importance to bats and avian species. Surveys should be conducted by a qualified biologist during the appropriate time of year to observe activities related to courtship, nesting, rearing of young, foraging, and migrating.*

<u>Page iii, Executive Summary</u>: The DEA states that the proposed Clipper wind turbine site is immediately adjacent to the existing Platte River Power Authority-Medicine Bow Wind Farm (PRPA). It also states that the proposed Clipper wind turbine would likely result in the mortality of 6.7 bats per year, 0.15 raptors per year, and 15.4 passerine birds per year. *The Service recommends that the DEA include detailed information regarding the methods in which these numbers were obtained. Additionally, we recommend an in-depth discussion of the mortality that may be expected from a fully developed wind farm with this specific type of turbine.*

<u>Page 12, 2.1.2 Construction and Installation Phase, paragraph 4</u>: The DEA states that the proposed lattice-type meteorological tower will be 240 feet tall and will be supported by three sets of guy wires. The Service strongly recommends that towers, including communication and meteorological towers not exceed 199 feet and use construction techniques that do not require guy wires. Please refer to the Guidance document as indicated above and see attachment: Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning. <u>Page 15, paragraph 2:</u> The DEA states that the construction/installation phase would start in December 2004. *Please see our comment above regarding the importance of pre-construction baseline surveys*.

<u>Page 21, paragraph 3:</u> The DEA states that post-construction surveys would consist of methods similar to those used by the SeaWest Foot Creek Rim Wind Plant. These methods include walking transects every two weeks within 250-feet of the tower looking for casualties. *The Service is concerned that mortality surveys, conducted at two week intervals, may not capture the extent of the actual mortalities due to carcasses being scavenged or desiccation of carcasses occurring so that observation becomes difficult or impossible. Additionally, the description of the proposed Clipper wind turbine states that the rotor and blade diameter is 305 feet and has almost five times the wind-swept area as the smaller wind turbines at the comparative wind farm. Therefore, we are also concerned that surveys within 250-feet of the tower may not encompass all areas of potential strikes.*

<u>Page 43, 3.2.8.3 Raptors:</u> The DEA states that there are five raptor nests/eyries within 2.0 miles of the project area. However, no monitoring has occurred at these sites to determine historic activity or current status. The Service recommends that a current raptor survey be conducted with 1.0-mile of the project area to determine raptor use such as nesting, foraging and migration corridors. This baseline information should be used in project planning.

<u>Page 43, Upland Game Birds, paragraph 2:</u> The DEA states that two greater sage-grouse leks occur within 2-miles of the project area. However monitoring of these leks has been sporadic since 1980. Therefore the Wyoming Game and Fish Department (WGFD) is collecting additional data before declaring these leks as no longer active. *The Service recommends that, until such time as the WGFD declares these leks not active, these leks and adjacent nesting habitat be managed following the guidelines by Connelly et al. 2000 (also known as the WAFWA guidelines).*

<u>Page 45, 3.2.8.5</u>: The DEA states that several species of migratory birds may potentially use the project area. However, the DEA does not mention whether construction will occur outside of the nesting season. The Service is concerned that construction activities, occurring during the nesting season, may result in direct take of active nests and/or young. To avoid such take we recommend that construction and related activities be conducted outside of the nesting season.

Page 63, 4.8.1.2, Other Mammals: The DEA indicates that approximately 1.34 bats per wind turbine were killed at SeaWest's Foote Creek Wind Farm located approximately 9-miles south of the proposed project area. It also states that wind turbines at the SeaWest farm are much smaller than the proposed Clipper wind turbine. The Clipper has a wind-swept area that is almost five times larger than the SeaWest turbines. The DEA goes on to state that no bat or avian mortality studies have been conducted at the Platte River Power Authority-Medicine Bow Wind Farm located immediately adjacent to the proposed Clipper wind turbine site. In order to determine potential bat mortalities the DEA makes a comparison between the SeaWest wind turbines and the proposed Clipper wind turbine (10 miles apart). The DEA assumed that all factors were constant between the two project areas except the wind swept area between the two types of turbines. This resulted in a potential of 6.7 bat mortalities per year for the Clipper wind turbine as compared to the 1.34 bats per turbine/per year for the SeaWest turbines. The DEA states that this is a worst case scenario based

on the limited nesting or roosting habitat located within the project area as compared to the Foote Creek Rim area. Finally, the DEA states that mortality surveys (post-construction) would document impacts to bat species. *Please refer to our previous comments regarding the importance of baseline surveys to determine use of the project area by bats and avian species. Use of the project area may also include migration corridors. The Service feels strongly that you include migration surveys in your baseline studies. Additionally, data on wildlife use and mortality collected at one wind energy facility may not necessarily be applicable to other sites; as each site possesses discrete site specific information and as a result may have different effects on wildlife. Since wind energy is rapidly expanding into habitats and regions that have not been well studied we strongly encourage a precautionary approach to site selection that includes an in-depth study of the specific area as well as review of existing pertinent information.*

Page 65, 4.8.1.3, Raptors:

- 1. The DEA states that no raptor nests are located within 1-mile of the project area. However, it also states that there are 5 nests/eyries within 2.0 miles of the site for which no historic occupancy data is available. *Please refer to our above comment regarding the importance of a current raptor survey.*
- 2. The DEA states it is unlikely that nesting raptors or raptor populations would be impacted by the proposed action, but that individual birds could be killed as a result of flying into the rotating turbine blades. *Raptors and other migratory birds can also be killed when they fly into guy wires. Therefore, we encourage you to consider erecting a meteorological tower that is not guy wired. We also remind you that under the MBTA, take is prohibited.*
- 3. The DEA states that the SeaWest wind farm located 9 miles away had few raptor mortalities despite the high use of the area by raptors. *Please refer to our previous comment regarding the use of wildlife data from existing wind farms to predict wildlife impacts for the Clipper wind turbine especially since the SeaWest turbines have a much smaller blade swept area than the Clipper turbine. Information from other sources should supplement the baseline information collected for the Clipper turbine, not replace that information.*

Page 68, 4.8.1.4, Upland Game Birds: The DEA states that the action would result in the loss of less than 10-acres of native vegetation and is unlikely to have an adverse effect on greater sage-grouse, although some birds may be killed by vehicles and the presence of the turbine may adversely affect nesting activities within and near the site. The DEA goes on to discus measures to minimize effects to sage-grouse. The Service reminds you that, despite our recommendation to find the greater sage-grouse unwarranted for listing at this time, we continue to have concerns regarding sage-grouse population status, trends and threats, as well as concerns for other sagebrush obligates. We strongly recommend that habitats be managed following the guidelines by Connelly et al. 2000 (also known as the WAFWA guidelines).

<u>Page 70, 4.8.1.5, Other Birds</u>: The DEA cites data from the SeaWest wind farm regarding migratory bird mortalities and uses this data to predict migratory bird mortality at the proposed Clipper wind turbine. The Service is concerned that data from a site 9 or 10 miles away is used exclusively to predict avian mortalities at the proposed Clipper wind turbine. We believe that information from

other wind farms may serve to supplement data collected from the proposed site, but not replace it, as migratory bird use may differ greatly from site to site. We recommend that you determine seasonal use in the area by migratory birds, including raptors. This may include nesting, roosting, foraging and migrating.

<u>Page 77, 4.10, Irreversible and Irretrievable Commitment of Resources:</u> The DEA states an irreversible and irretrievable commitment of resources would include the loss of productivity (i.e., forage and wildlife habitat) from lands involved in the project...and loss of animals due to mortality. *The Service believes that, through the use and implementation of the Guidance document as discussed above and the collection of science-based data for this proposed project, the Clipper wind turbine project can move forward with little or no adverse effects to wildlife and their habitats.*

We appreciate your efforts to ensure the conservation of endangered, threatened, and candidate species and migratory birds. If you have further questions regarding our comments or your responsibilities under the Act, please contact Kathleen Erwin at 307-772-2374 extension 28.

Sincerely,

Brian T. Kelly Field Supervisor Wyoming Field Office

References

- Connelly J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin 28(4): 967 985.
- cc: BLM, Field Manager, Rawlins (M. Storzer)
 FWS, Federal Activities Coordinator, Lakewood (R. Dach)
 WGFD, Non-Game Coordinator, Lander (B. Oakleaf)
 WGFD, Statewide Habitat Protection Coordinator, Cheyenne (V. Stelter)



Department of Energy

Golden Field Office 1617 Cole Boulevard Golden, Colorado 80401-3305

January 19, 2005

Mr. Brian Kelly Field Supervisor Wyoming Field Office U.S. Fish and Wildlife Service Ecological Services 4000 Airport parkway Cheyenne, WY 82001

Dear Mr. Kelly:

RE: Response to U.S. Fish and Wildlife Service (Service) Comments on Draft Environmental Assessment for the Proposed Clipper Windpower, Inc. Low Wind Speed Turbine Demonstration Project, Carbon County, Wyoming. DOE/EA-1516

Pursuant to your comment letter to Mr. Steve Blazek dated January 6, 2005, please accept this letter as the Department of Energy's (DOE's) response to your comments concerning the above referenced Draft Environmental Assessment (DEA). Our responses are presented in the same order as your comments.

USFWS Comment 1.

<u>General Comment:</u> The U.S. Fish and Wildlife Service (Service) understands the need to determine the economic and technical feasibility of the Clipper wind turbine design in order to explore possible opportunities for reducing costs over the current wind turbine configurations. However, we strongly encourage the Department of Energy (DOE) to incorporate measures to avoid and/or minimize effects to wildlife and their habitats. These efforts should be an integral part of project planning. To assist in project planning the Service has issued *Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Turbines* (Guidance). The Guidance document can be found at the following website http://www.fws.gov/r9dhcbfa/wind/pdf.

DOE Response to Comment 1.

DOE is very concerned about minimizing potential environmental impacts of the proposed Clipper Low Wind Speed Demonstration project and takes its regulatory responsibilities seriously. Clipper Windpower Inc. (Clipper) has used the Service Guidance document in the planning phase of this project and the preparation of the DEA.



As a result, several potential sites for the proposed project were evaluated by Clipper and eliminated from detailed analysis in the DEA because they ran contrary to many of the siting recommendations presented in the Service Guidance and would have resulted in more potential environmental impacts than the proposed project. Clipper determined the best available site by identifying potential project areas that conform to as many of the siting recommendations presented in the Service Guidance document as possible, while still meeting other technical, economic, and administrative restrictions.

In particular, DOE wants to draw special attention to Site Development Recommendations 1-10 presented in the Service Guidance document. Specifically, Clipper has avoided placement of the wind turbine in documented locations of any species protected under the federal Endangered Species Act as outlined in Recommendation #1 (see Sections 3.2.4 and 4.4.1 of the DEA). In addition, there are no known raptor nests within 1.0 mi of the proposed project site and only 5 nests/eyries within 2 mi of the proposed project site. Clipper has also avoided placement of the wind turbine in known local migratory pathways, known daily movement flyways (e.g. between roosting and feeding areas), or in areas where birds typically concentrate, such as wetlands (Recommendation #2). Clipper has also avoided placement of the wind turbine in known bat hibernation, breeding, maternity/nursery colonies, migration corridors, flight paths between colonies, or feeding areas (Recommendation #3). In addition, as stated in the DEA, the proposed wind turbine site avoids areas or features known to attract raptors such as cliff/rim edges, buttes, mountains, or prairie dog colonies (Recommendation #4). To further delineate wildlife use of the proposed site and any impacts associated with the proposed turbine, the applicant-committed measures include surveying of avian (raptor and passerine) use of the site along with mortality surveys associated with the turbine and meteorological tower. Please note that Clipper would be contractually bound to all committed to measures as a condition of Federal funding.

The Service Guidance document also recommends that wind turbines: be grouped together rather than spreading them widely (Recommendation #5); avoid fragmenting large contiguous tracts of land (Recommendation #6); and minimize roads, fences, and other infrastructures (Recommendation #8). As noted in the DEA, the proposed wind turbine site meets all of these criteria. The proposed wind turbine site would be grouped with the immediately adjacent (within 800 ft) existing Medicine Bow WindFarm and as a result, Clipper would be able to utilize the existing infrastructure (e.g., roads, powerlines, etc) from the Medicine Bow Wind Farm. In addition, the project would result in less than 10 acres of total new disturbance (including 8.45 acres of temporary disturbance and 1.25 acres of life-of-project disturbance). As recommended in the Service Guidance document (Recommendation #5), the proposed project would also implement appropriate storm water pollution prevention measures that do not create attractions for birds and maintain contiguous habitat for area-sensitive species. The Service Guidance document also recommends the development of a habitat restoration plan that avoids or minimizes negative impacts on vulnerable wildlife while maintaining and enhancing wildlife habitat values for other species (Recommendation #9). The proposed restoration plan included in the DEA would reclaim and revegetate the site to pre-disturbance conditions thereby meeting this objective.

Clipper has met the majority of the site development recommendations discussed in the Service Guidance document and has minimized potential impacts wherever practical. Unfortunately, Clipper was unable to site the proposed wind turbine more than 5 mi from known greater sage-grouse leks (Recommendation #7). As illustrated in the DEA, there are four known greater sage-grouse leks within 5 mi of the proposed wind turbine site. The two closest leks are located 0.5 and 0.7 mi south of the proposed wind turbine site. Based on Wyoming Game and Fish Department monitoring, these leks have had no attendance from 1999 through 2004. It is possible that these leks may have been impacted by natural degradation of the local sagebrush habitat or the existing Medicine Bow Wind Project and may have been abandoned. Construction of the proposed wind turbine would also be completed prior the breeding season and construction activities should not interfere or disturb any greater sage-grouse that may utilize the leks during the breeding season. The Wyoming Game and Fish Department (WGFD) will continue to monitor these leks for attendance to determine their future status. This information is presented in the DEA. Clipper has attempted to locate the proposed wind turbine as far away as possible from greater sage-grouse leks, and as stated in the DEA, the proposed wind turbine is expected to have minimal additional impacts on greater sage-grouse.

In Summary, DOE has reviewed Clipper's use of the Site Development Recommendations presented in the Service Guidance document. DOE has determined that Clipper has made a good-faith effort to meet the voluntary recommendations and has proposed a site for the demonstration wind turbine that minimizes disturbance and potential impacts to all wildlife species.

USFWS Comment 2.

Page ii, Executive Summary: The DEA states that the wind energy company will monitor impacts to bats and avian species by conducting mortality surveys during the first 12 months of operation of the Clipper wind turbine. Determining post-construction survey and monitoring needs should be based on the results of pre-construction baseline surveys. Monitoring efforts may be cursory in areas where recorded pre-construction use by bats and/or avian species is low. However, it may be necessary to conduct intensive monitoring in areas of documented high use. For this reason the Service recommends that the company collect pre-disturbance baseline wildlife information to evaluate the site for its importance to bats and avian species. Surveys should be conducted by a qualified biologist during the appropriate time of year to observe activities related to courtship, nesting, rearing of young, foraging, and migrating.

DOE Response to Comment 2.

DOE agrees with the Service that pre-construction monitoring may be warranted in areas that receive high use by bats and/or avian species. In the same light, DOE also agrees that pre-construction monitoring is likely not warranted in areas that receive low use by bats and/or avian species. Based on analysis conducted by TRC-Mariah, it is DOE's

opinion that the bat and/or avian species use of the project area is low. This position is based on the fact that the project area has been utilized for wind energy projects for more than 20 years, relevant bat and avian information has been collected from other projects conducted in the general area including the Foote Creek and Simpson Ridge Wind Farm projects, and the Carbon Basin Coal Mine project, and the lack of known important habitats such as nesting and breeding areas, migration routes, sensitive habitats (wetlands) for bats and/or avian species within or near the project area. Mr. David Young, Jr. with Western EcoSystems Technology, Inc. (WEST) (of Cheyenne, Wyoming) and project biologist for bat and avian studies that were conducted at the Foote Creek Rim Windpower Project, agrees that pre-construction monitoring would not be very useful given the very small project area, the specific habitats near the project area, and the existence of the Medicine Bow Wind Farm Project (personal communication between Scott Kamber, TRC-Mariah and David Young, WEST, January 7, 2005).

Mr. Young also noted that the result of pre-construction monitoring conducted at the Foote Creek Rim Windpower Project did not correlate with the results from post-construction bat and avian species mortality surveys conducted for the same area (personal communication, Kamber/Young January 7, 2005). For example, as noted in Young et al. (2003) golden eagle use of the Foote Creek Rim wind farm represented 40% of all documented raptor use of the study area. Utilizing the pre-construction use survey method to predict impacts and mortalities, it would have been logical to predict that golden eagle mortalities were recorded during the 3.5-year study period. Like wise, American kestrels accounted for only 5% of the total raptor use of the study area, but they accounted for 60% of the raptor mortalities. It may be useful for the Service to review this research that was conducted within 10 mi of the proposed project area. Copies of Young et al. (2003) can be obtained at <u>http://www.west-inc.com/wind reports.php</u>.

As result of this apparent low use of the project area by bats and/or avian species, it is DOE's professional opinion that pre-construction bat and avian use surveys of the project area are not necessary or warranted for this project. However, despite the low use of the project area by bats and/or avian species, DOE would require, Clipper to conduct post-construction mortality surveys for bats and avian species during the first 12 months of operation. DOE contends that the post-construction monitoring is justified and important to document actual impacts to bat and/or avian species due to the operation of the larger Clipper wind turbine. DOE would also require Clipper to conduct raptor and passerine bird use surveys at the project site during the first 12-month period of operation using methods and protocols present go in Thorias et al. (1997) and used at the nearby Foote Creek Rim Windpower Project. All surveys would be conducted by qualified Biologists. Detailed survey methods would be included in a survey protocol document to be prepared for the project and submitted to DOE, USFWS for review and comment.

USFWS Comment 3.

<u>Page iii, Executive Summary:</u> The DEA states that the proposed Clipper wind turbine site is immediately adjacent to the existing Platte River Power Authority-Medicine Bow Wind Farm (PRPA). It also state that the proposed Clipper wind turbine would likely result in the mortality of 6.7 bats per year, 0.15 raptors per year, and 15.4 passerine birds per year. The Service recommends that the DEA include detailed information regarding the methods in which these numbers were obtained. Additionally, we recommend an in-depth discussion of the mortality that may be expected from a fully developed wind farm with this specific type of turbine.

DOE Response to Comment 3.

Detailed information regarding the methods used to estimate bat and avian mortality is currently included in Section 4.8.1 of the DEA. Additional detail is provided in the Errata document, which is a component of the Final EA.

In addition, the Proposed Action is only for the construction and operation of the single Clipper demonstration wind turbine and as stated in the DEA, there are no reasonably foreseeable plans to place more wind turbines at this site. If additional federally-funded turbines were to be located at this site, additional environmental analysis would likely be conducted. Therefore, this portion of the Service comment is outside the scope of this NEPA analysis.

USFWS Comment 4

<u>Page 12, 2.1.2 Construction and Installation Phase, paragraph 4.</u> The DEA states that the proposed lattice-type meteorological tower will be 240 feet tall and will be supported by three sets of guy wires. *The Service strongly recommends that tower, including communication and meteorological towers not exceed 199 feet and use construction techniques that do not require guy wires. Please refer to the Guidance document as indicated above and see attachment: Interim Guidelines for Recommendations on Communications Tower siting, Construction, Operation, and Decommissioning.*

DOE Response to Comment 4

As stated above, Clipper has utilized and incorporated the recommendations stated in the Service Guidance document into the planning phase of this project, wherever possible. DOE and Clipper recognize that tall, guy-wired meteorological towers can result in numerous bat and avian mortalities. However, as stated in the DEA, one of the primary purposes of the proposed research project is international certification of the demonstration wind turbine. These certification standards specify the location and height requirements of meteorological towers relative to turbines being certified. Meteorological data is needed to correlate wind velocities seen by the turbine with the power output generated. This correlation is required to predict the rated power output of the turbine. According to the international standards, meteorological tower height must be within 2% of hub height of the turbine (the hub height will be 75 meters, or 246 feet), and a maximum of 2 to 4 rotor diameters from the turbine, with the accepted practice being 2.5 rotor diameters away from the turbine (about 760 feet in this case). DOE has discussed with Clipper the potential use of the existing meteorological towers associated with the Medicine Bow Wind Project and it has determined that these towers are too far away from the proposed turbine site and not tall enough to be utilized for the proposed research project. While utilization of an existing meteorological tower would result in significant cost savings, it would not meet the technical data standards that are required for this project. In addition, the tower must be 240 ft tall, and a guyed-lattice tower is the only practical and reasonable method that can be used to erect a tower of that height.

USFWS Comment 5

<u>Page 15, paragraph 2:</u> The DEA states that the construction/installation phase would start in December 2004. *Please see our comment above regarding the importance of pre-construction baseline surveys.*

DOE Response to Comment 5.

Please refer to DOE Response to Comment 2.

USFWS Comment 6

<u>Page 21, Paragraph 3.</u> The DEA states that post-construction surveys would consist of methods similar to those used by the SeaWest Foote Creek Rim Wind Plant. These methods include walking transects every two weeks with 250-ft of the tower looking for casualties. *The Service is concerned that mortality surveys, conducted at two week intervals, may not capture the extent of the actual mortalities due to carcasses being scavenged or desiccation of carcasses occurring so that observation become difficult or impossible. Additionally, the description of the proposed Clipper wind turbine states that the rotor and blade diameter is 305 feet and has almost five times the wind-swept area as the small wind turbines at the comparative wind farm. Therefore, we are also concerned that surveys within 250 ft of the tower may not encompass all areas of potential strikes.*

DOE Response to Comment 6.

Based on the review of the Clipper wind turbine and recommendation by Mr. David Young, Jr. (with WEST of Cheyenne, Wyoming), DOE has increased the mortality search distance from 250 ft to 325 ft. This change is expected to be adequate to capture the mortalities associated with the larger wind turbine design.

Based on the recommendation of Mr. Young, the frequency of surveys will be changed from once every two weeks to a time period based on the results of on-site seasonal carcass removal trials that will be conducted at the project site (personal communication between Scott Kamber, TRC-Mariah, and David Young, West, January 7, 2005). The

objective of the carcass removal trials is to estimate the length of time avian and bat carcasses remain in the search areas prior to being removed. Carcass removal eliminates the possibility of detection during mortality surveys and includes removal by predators, scavengers, or other means; it is directly related to level of use of the project area by local scavengers. The carcass removal trials would be conducted utilizing protocol presented in the Final Report: Avian and Bat Mortality Associated with the Initial Phase of the Foote Creek Rim Windpower Project, Carbon County, Wyoming (Young et al. 2003). This document can be found at http://www.west-inc.com/wind reports.php. The trials would be conducted at the beginning of each of the following seasons: spring migration (February 15 – April 15), summer breeding season (April 16 – August 31), fall migration (September 1 - October 31), and winter (November 1 - February 14) and would be used to statistically determine the amount of time between each survey. The carcass removal trials will document scavenger use of the immediate project area and will be used to determine the frequency of mortality surveys. Therefore, the 325-ft survey distance for the mortality surveys are included in the Errata Document for the DEA. In addition, a commitment to conduct carcass removal trials will replace the two-week survey period and is reflected in the Errata Document for the DEA.

USFWS Comment 7

<u>Page 43, 3.2.8.3 Raptors</u>: The DEA states that there are five raptor nests with 2.0 miles of the Project area. However, no monitoring has occurred at these sites to determine historic activity or current status. *The Service recommends that a current raptor survey be conducted within 1.0 mile of the project area to determine raptor use such as nesting, foraging, and migration corridors. This baseline information should be used in project planning.*

DOE Response to Comment 7.

Clipper Windpower has agreed to conduct surveys of current use of the immediate project area by raptors and passerine birds along with the mortality surveys mentioned in the DEA. The current site use surveys will be based on survey methods and protocols used at the nearby Foote Creek Rim Windpower Project. The Errata to the DEA includes a commitment to these current site use surveys.

USFWS Comment 8

<u>Page 43, Upland Game Birds, paragraph 2:</u> the DEA states that two greater sagegrouse leks occur within 2 miles of the project area. However, monitoring of these leks has been sporadic since 1980. Therefore, the WGFD is collecting additional data before declaring these leks are no longer active. *The Service recommends that until* such times as the WGHFD declare these leks not active, these leks and adjacent nesting habitat be managed following the guidelines by Connelly et al. 2000 (also known as the WAFWA guidelines).
DOE Response to Comment 8

DOE has incorporated the greater sage-grouse guidelines presented in Connelly et al. 2000, as much as practical, in the DEA. Please refer to the discussion on greater sage-grouse presented in the DOE Response to Comment 1.

USFWS Comment 9

<u>Page 45, 3.2.8.5</u>: The DEA states that several species of migratory birds may potentially use the project area. However, the DEA does not mention whether construction will occur outside of the nesting season. The Service is concerned that construction activities, occurring during the nesting season, may result in direct take of active nests and/or young. To avoid such take we recommend that construction and related activities be conducted outside of the nesting season.

DOE Response to Comment 9

In Section 2.1.2 of the DEA, it states that construction would require approximately 2 months to complete and would start in December 2004. Construction is now scheduled to begin in January, and is anticipated to be complete by the end of March 2005. It is therefore clear (as stated in the DEA) that construction activities would not occur during the nesting season for migratory birds in the project area.

USFWS Comment 10

Page 63, 4.8.1.2, Other Mammals: The DEA indicates that approximately 1.34 bats per wind turbine were killed at SeaWest's Foote Creek Wind Farm located approximately 9 miles south of the proposed project area. It also states that wind turbines at the SeaWest farm are much smaller than the proposed Clipper wind turbine. The Clipper has a wind-swept area that is almost five times larger than the SeaWest turbines. The DEA goes on to state that no bat or avian mortality studies have been conducted at the Platte River Power Authority-Medicine Bow Wind Farm located immediately adjacent to the proposed Clipper wind turbine site. In order to determine potential bat mortalities the DEA makes a comparison between the SeaWest wind turbine and the proposed Clipper wind turbine (10 miles apart). The DEA assumes that all factors were constant between the two project areas except the wind swept area between the two types of turbines. This resulted in a potential of 6.7 bat mortalities per year for the Clipper wind turbine as compared to the 1.34 bats per turbine for the SeaWest turbines. The DEA states that this is a worst case scenario based on limited nesting or roosting habitat located with the project area compared to the Foote Creek Rim area. Finally, the DEA states that mortality surveys (postconstruction) would document impacts to bat species. Please refer to our previous comments regarding the importance of baseline surveys to determine use of the project area by bats and avian species. Use of the project area may also include

migration corridors. The Service feels strongly that you include migration surveys in your baseline studies. Additionally, data on wildlife use and mortality collected at one wind energy facility may not necessarily be applicable to other sites, as each site possesses discrete site specific information and as a result may have different effects on wildlife. Since wind energy is rapidly expanding into habitats and regions that have not been well studied we strongly encourage a precautionary approach to site selection that includes an in-depth study of the specific area as well as review of existing pertinent information.

DOE Response to Comment 10

Please see DOE Response to Comment 2 presented above for a discussion of the relevance of data from the Foote Creek Rim project, and DOE Response to Comment 7 for information regarding the current site use survey planned by Clipper.

USFWS Comment 11-1

The DEA states that no raptor nests are located within 1-mile of the project area. However, it also states that there are 5 nests/eyries within 2.0 miles of the sites for which no historic occupancy data is available. *Please review to our above comment regarding the importance of a current raptor survey.*

DOE Response to Comment 11-1.

Please refer to DOE Response to Comment 7.

USFWS Comment 11-2

The DEA states it is unlikely that nesting raptors or raptor populations would be impacted by the proposed action, that individual birds could be killed as a result of flying into the rotating turbine blades. *Raptors and other migratory birds can also be killed when they fly into guy wires. Therefore, we encourage you to consider the erecting a meteorological tower that is not guy wired. We also remind you that under the MBTA, take is prohibited.*

DOE Response to Comment 11-2.

Please refer to DOE Response to Comment 4.

USFWS Comment 11-3

The DEA states that the SeaWest wind farm located 9 miles away had few raptor mortalities despite the high use of the area by raptors. *Please refer to our previous comment regarding the use of wildlife data from existing wind farms to predict wildlife impacts for the Clipper wind turbine especially since the SeaWest turbines have a much smaller blade swept area than the Clipper turbine. Information from* other sources should supplement the baseline information collected for the Clipper turbine, not replace that information.

DOE Response to Comment 11-3

Please refer to DOE Responses to Comments 2 and 7.

USFWS Comment 12

<u>Page 68, 4.8.1.4, Upland Game Birds:</u> The DEA states that the action would result in the loss of less than 10-acres of native vegetation and is unlikely to have an adverse effect on greater sage-grouse, although some birds may be killed by vehicles and the presence of the turbine may adversely affect nesting activities within and near the site. The DEA goes on to discuss measures to minimize effects to sage-grouse. The Service reminds you that, despite our recommendation to find the greater sage-grouse unwarranted for listing at this time, we continue to have concerns regarding sage-grouse population status, trends and threats, as wall as concerns for other sagebrush obligates. We strongly recommend that habitats be managed following the guidelines by Connelly et al. 200 (also known as the WAFWA guidelines).

DOE Response to Comment 12

DOE encourages responsible development, and Clipper's plan for construction and operation of the demonstration turbine includes measures to minimize surface disturbance, minimize and avoid impacts to wildlife species, and adhere to applicable management guidelines such as those presented in Connelly et al. (2000). Please refer to DOE Response to Comment 1 for a discussion of the sage grouse issue.

USFWS Comment 13

Page 70, 4.8.1.5 Other Birds: The DEA cites data from the SeaWest wind farm regarding migratory bird mortalities and uses this data to predict bird mortality at the proposed clipper wind turbine. The Service is concerned that data from a site 9 or 10 miles away is used exclusively to predict avian mortalities at the proposed Clipper wind turbine. We believe that information from other wind farms may serve to supplement data collected from the proposed site, but not replace it, as migratory bird use may differ greatly from site to site. We recommend that you determine seasonal use in the area by migratory birds, including raptors. This may include nesting, roosting, foraging, and migrating.

DOE Response to Comment 13

Please refer to DOE Responses to Comments 2 and 7 for a discussion of this issue.

USFWS Comment 14

<u>Page 77, 4.10, Irreversible and Irretrievable Commitment of Resources.</u> The DEA states an irreversible and irretrievable commitment of resources would include the loss of productivity (i.e., forage and wildlife habitat) from lands involved in the project... and loss of animals due to mortality. The Service believes that, through the use and implementation of the Guidance document as discussed above and the collection of science-based data for this proposed project, that Clipper wind turbine project can move forward with little or no adverse effects to wildlife and their habitats.

DOE Response to Comment 14

DOE appreciates USFWS's review of the proposal Clipper Windpower, Inc., Low Wind Speed Turbine Demonstration Project Environmental Assessment. If you have further questions regarding DOE's response to your comments, please contact Steve Blazek at 303-275-4723. Mr. Blazek will contact you in the near future to coordinate review and comment of the Survey Protocol documents.

Sincerely,

An H Heuter

John H. Kersten Manager

Enclosure



JAN 14 RECT

January 7, 2005

WER 10988 Department of Energy Golden Field Office Draft Environmental Assessment Proposed Clipper Windpower, Inc. Low Wind Speed Turbine Demonstration Project Carbon County

Steve Blazek NEPA Compliance Officer DOE Golden Field Office 1617 Cole Boulevard Golden, CO 80401-3393

Dear Mr. Blazek:

The staff of the Wyoming Game and Fish Department has reviewed the Draft Environmental Assessment for the Proposed Clipper Windpower, Inc. Low Wind Speed Turbine Demonstration Project in Carbon County. We offer the following comments.

Terrestrial Considerations:

We provided comments on the scoping of this project in a letter dated November 10, 2004, and those concerns still exist.

The project occurs crucial winter/yearlong range for antelope, winter/yearlong range for mule deer, and a sage-grouse lek complex. Bald eagle, golden eagle, red-tailed hawk, ferruginous hawk, Swainson hawk, prairie falcon, kestrel and great-horned owl are known to nest in the surrounding area and northern harrier and burrowing owl occur in the project vicinity. Several migratory birds that can be found in this area include mountain plover, sandhill crane, Canada geese, and a variety of other waterfowl, shorebirds and wading birds. Historically, black-footed ferrets were sighted in the general vicinity. A variety of bats occur in the area.

Major unresolved issues raised during scoping include the justification for siting the demonstration project at this site, the lack of detail in comparing how the Clipper low speed turbine differs from existing turbines that have been evaluated for environmental consequences,

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Steve Blazek January 7, 2005 Page- 2 –WER 10988

the lack of adequate baseline, construction and post-construction monitoring, and the minimal commitment to avoid impacts or implement mitigation.

The EA does not fully address the cumulative impacts (Section 4.9, pp 75ff), particularly the existing and proposed wind plants in the vicinity, and fails to disclose the potential for windpower expansion at the proposed site. Figure 4.1 and the related discussion are incomplete and do not show many of the projects.

A considerable amount of wildlife information has been gathered in the vicinity and at nearby windplants over the years. We suggested that these be specifically reviewed and referenced in the EA. If the EA is going to base assumptions on other studies (e.g., SeaWest), then it needs to present the similarities and differences between sites and projects. A single, nonquantified reconnaissance survey is inadequate as a baseline for the project (e.g., p. 41).

Measures to reduce impacts incorporated into the project are vague and appear to be solely at the discretion of the operator, despite federal funding and involvement. For example, we recommended during scoping that construction not occur from November 15- April 30, to prevent disturbance on crucial big game range. However, construction would start in December of 2004 and continue for about 2 months during this sensitive period (pp. 15, 21, 60-62).

Measures to mitigate sage-grouse concerns are inadequate (p. 21). The immediate construction of the project does not allow for any baseline data gathering and may discourage sage-grouse from even initiating strutting in the event these birds decide to reoccupy close lek sites. NREL or Clipper WindPower should commit to this monitoring. If leks are active, additional mitigation would be required.

The provision for only monitoring mortality for only 1 year (p. 21) is grossly inadequate and does not negate the project from obligations under the Migratory Bird Treaty Act and other laws. One year's monitoring may mask actual impacts due to seasonal and annual variation. DOE should require monitoring for at least 3 years. Results should be compared to other nearby projects. Mortality monitoring does not address scavenging and decomposition (pp. 64-65).

We suggest that the design and characteristics of the proposed low-speed wind turbine be contrasted with other existing designs, including height of rotor-swept area, blade tip speeds, and potential for wildlife mortalities. Implications of the differing height of the rotor-swept area from the Clipper design to conventional turbines should be discussed in detail (p. 64).

Individual met towers can cause as much wildlife mortality as working turbines, especially if these are lattice towers with guy wires. We recommend using current met towers by the Platte River Power Authority and others since they are already monitoring wind speeds in the area.

The assumptions about impacts to Bald Eagles (p. 35, p. 54) are understated. An active Bald Eagle nest is within 8 miles of the preferred site and is directly in the flight line to East Allen Lake, where waterfowl, fish and other preferred prey occur.

Steve Blazek January 7, 2005 Page- 3 –WER 10988

In summary, we are disappointed that the Draft EA did not take our scoping comments more seriously. The document fails to recognize the potential implications of this different type of wind turbine.

Aquatic Consideration:

We continue to have no aquatic concerns pertaining to this project.

We thank DOE for the opportunity to provide comments. We ask that DOE provide a more comprehensive final EA and assure adequate monitoring and mitigation.

Sincerely,

eras.

BILL WICHERS DEPUTY DIRECTOR

BW:VS:as cc: Mary Flanderka-Governor's Planning Office USFWS



Department of Energy

Golden Field Office 1617 Cole Boulevard Golden, Colorado 80401-3305

January 19, 2005

Mr. Bill Wichers Deputy Director Wyoming Game and Fish Department 5400 Bishop Blvd Cheyenne, WY 82002

RE: Response to Wyoming Game and Fish Department (WGFD) Comments on Draft Environmental Assessment for the Proposed Clipper Windpower, Inc. Low Wind Speed Turbine Demonstration Project, Carbon County, Wyoming. DOE/EA-1516

Dear Mr. Wichers:

Pursuant to your comment letter to Mr. Steve Blazek dated January 7, 2005, please accept this letter as the Department of Energy's (DOE's) response to your comments concerning the above referenced Draft Environmental Assessment (DEA). Our responses are presented in the same order as your comments.

WGFD Comment 1

We provided comments on the scoping of this project in a letter dated November 10, 2004, and those concerns still exist.

DOE Response to Comment 1

Please see responses below.

WGFD Comment 2

Major unresolved issues raised during scoping include the justification for siting the demonstration project at this site, the lack of detail in comparing how the Clipper low speed turbine differs from existing turbines that have been evaluated for environmental consequences, the lack of adequate baseline, construction and post-construction monitoring, and minimal commitment to avoid impacts or implement mitigation.



DOE Response to Comment 2

DOE is very concerned about minimizing potential environmental impacts of the proposed Clipper Low Wind Speed Demonstration project and takes its regulatory responsibilities seriously. Clipper Windpower Inc. (Clipper) has used the U.S. Fish & Wildlife Service Guidance document, *Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Turbines* (Service Guidance), in the planning phase of this project and the preparation of the DEA. As a result, several potential sites for the proposed project were evaluated by Clipper and eliminated from detailed analysis in the DEA because they ran contrary to many of the siting recommendations presented in the Service Guidance and would have resulted in more potential environmental impacts than the proposed project. Clipper determined the best available site by identifying potential project areas that conform to as many of the siting recommendations presented in the Service Guidance document as possible, while still meeting other technical, economic, and administrative restrictions.

DOE agrees with WGFD that pre-construction monitoring may be warranted in areas that receive high use by bats and/or avian species. In the same light, DOE also agrees that pre-construction monitoring is likely not warranted in areas that receive low use by bats and/or avian species. Based on TRC-Mariah's analysis, it is DOE's opinion that the bat and/or avian species use of the project area is low. This position is based on the fact that the project area has been utilized for wind energy projects for more than 20 years, relevant bat and avian information has been collected from other projects conducted in the general area including the Foote Creek and Simpson Ridge Wind Farm projects, and the Carbon Basin Coal Mine project, and the lack of known important habitats such as nesting and breeding areas, migration routes, sensitive habitats (wetlands) for bats and/or avian species within or near the project area. Mr. David Young, Jr. with Western EcoSystems Technology, Inc. (WEST) (of Cheyenne, Wyoming) and project biologist for bat and avian studies that were conducted at the Foote Creek Rim Windpower Project, agrees that pre-construction monitoring would not be very useful given the very small project area, the specific habitats near the project area, and the existence of the Medicine Bow Wind Farm Project (personal communication between Scott Kamber, TRC-Mariah and David Young, WEST, January 7, 2005).

Mr. Young also noted that the result of pre-construction monitoring conducted at the Foote Creek Rim Windpower Project did not correlate with the results from postconstruction bat and avian species mortality surveys conducted for the same area (personal communication, Kamber/Young, January 7, 2005). For example, as noted in Young et al. (2003) golden eagle use of the Foote Creek Rim wind farm represented 40% of all documented raptor use of the study area. Utilizing the pre-construction use survey method to predict impacts and mortalities, it would have been logical to predict that golden eagles would represent approximately 40% of the mortalities. However, no golden eagle mortalities were recorded during the 3.5-year study period. Like wise, American kestrels accounted for only 5% of the total raptor use of the study area, but they accounted for 60% of the raptor mortalities. It may be useful for the Service to review this research that was conducted within 10 mi of the proposed project area. Copies of Young et al. (2003) can be obtained at <u>http://www.west-inc.com/wind_reports.php</u>.

As result of this apparent low use of the project area by bats and/or avian species, it is DOE's professional opinion that additional pre-construction bat and avian use surveys of the project area are not necessary or warranted for this project. However, despite the low use of the project area by bats and/or avian species, DOE would require Clipper to conduct post-construction mortality surveys for bats and avian species during the first 12 months of operation. DOE contends the post-construction monitoring is justified and important to document actual impacts to bat and/or avian species due to the operation of the larger Clipper wind turbine. DOE would also require Clipper to conduct raptor and passerine bird use surveys at the project site during the first 12-month period of operation using methods and protocols presented in Thomas et al. (1997) and used at the nearby Foote Creek Rim Windpower Project. All surveys would be conducted by qualified biologists. Detailed survey methods would be included in a survey protocol document to be prepared for the project and submitted to DOE, USFWS, and WGFD for review and comment.

Based on the review of the Clipper wind turbine and recommendation by Mr. David Young, Jr. (with WEST of Cheyenne, Wyoming), DOE has increased the mortality search distance from 250 ft to 325 ft. This change is expected to be adequate to capture the mortalities associated with the larger wind turbine design. The 325-ft survey distance for the mortality surveys is included in the Errata Document for the DEA.

Based on the recommendation of Mr. Young, the frequency of surveys will be changed from once every two weeks to a time period based on the results of on-site seasonal carcass removal trials that will be conducted at the project site (personal communication between Scott Kamber, TRC-Mariah, and David Young, West, January 7, 2005). The objective of the carcass removal trials is to estimate the length of time avian and bat carcasses remain in the search areas prior to being removed. Carcass removal eliminates the possibility of detection during mortality surveys and includes removal by predators, scavengers, or other means; it is directly related to level of use of the project area by local scavengers. The carcass removal trials would be conducted utilizing protocol presented in the Final Report: Avian and Bat Mortality Associated with the Initial Phase of the Foote Creek Rim Windpower Project, Carbon County, Wyoming (Young et al. 2003). This document can be found at <u>http://www.west-inc.com/wind reports.php</u>. The trials would be conducted at the beginning of each of the following seasons: spring migration (February 15 – April 15), summer breeding season (April 16 – August 31), fall migration (September 1 - October 31), and winter (November 1 - February 14) and would be used to statistically determine the amount of time between each survey. The carcass removal trials will document scavenger use of the immediate project area and will be used to determine the frequency of mortality surveys. In addition, a commitment to conduct carcass removal trials will replace the two-week survey period and is reflected in the Errata Document for the DEA.

WGFD Comment 3

The EA does not fully address the cumulative impacts (Section 4.9, pp75ff), particularly the existing and proposed wind plants in the vicinity, and fails to disclose the potential for windpower expansion at the proposed site. Figure 4.1 and the related discussion are incomplete and do not show many of the projects.

DOE Response to Comment 3

DOE has made every effort to fully address cumulative impacts in the DEA, including the existing wind farm, and proposed wind farms and other industrial development in the general project area known to DOE, Clipper, and TRC-Mariah staff.

In addition, the Proposed Action only calls for the construction and operation of the single Clipper demonstration wind turbine and as stated in the DEA, there are no reasonably foreseeable plans to place more wind turbines at this site. If additional turbines were to be located at this site as part of a federally-funded project, additional environmental analysis would likely be conducted. Therefore, this portion of the WGFD comment is outside the scope of this NEPA analysis.

WGFD Comment 4

A considerable amount of wildlife information has been gathered in the vicinity and at nearby windplants over the years. We suggest that these be specifically reviewed and referenced in the EA. If the EA is going to base assumptions on other studies (e.g., SeaWest), then it needs to present the similarities and differences between sites and projects. A single, nonquantified reconnaissance survey is inadequate as a baseline for the projects (e.g., p 41).

DOE Response to Comment 4

The DEA currently discusses and cites numerous baseline environmental studies that have been conducted over the past several years including the Environmental Impacts Statements (EISs) for the Foote Creek Rim and Simpson Ridge wind farm project, the EIS for the Carbon Basin Coal Mine, and post-construction monitoring conducted at the Foote Creek Rim and Simpson Ridge project areas. The DEA states that the environmental analysis includes the existing baseline studies supplemented with a reconnaissance survey.

Detailed information regarding the methods used to estimate bat and avian mortality is currently included in Section 4.8.1 of the DEA. Additional detail has been added, and is provided in the Errata document which is a component of the Final EA.

Clipper has committed to conduct avian use surveys and post-construction mortality surveys for bats and avian species during the first 12 months of operation. DOE feels

these various surveys are justified and important to document actual impacts to bat and/or avian species due to the operation of the larger Clipper wind turbine. Information concerning additional surveys has been included in the Errata document for the DEA.

WGFD Comment 5

Measures to reduce impacts incorporated into the project are vague and appear to be solely at the discretion of the operator, despite federal funding and involvement. For example, we recommended during scoping that construction not occur from November 15 - April 30, to prevent disturbance on crucial big game range. However, construction would start in December of 2004 and continue for about 2 months during this sensitive period (pp. 15, 21, 60-62).

DOE Response to Comment 5

In addition to the applicant-committed practices currently listed in Section 2.1.5 of the DEA, please reference the additional applicant committed measures regarding raptor and passerine avian use surveys, as described in the attached Errata document. Clipper Windpower will be contractually bound to all of these applicant-committed practices.

Section 4.8.1.1 includes a discussion of potential environmental impacts to pronghorn antelope and the applicant-committed practice included in the project to minimize impacts. Additional information concerning the timing and extent of construction operations has been included in the Errata Document for the DEA.

WGFD Comment 6

Measures to mitigate sage-grouse concerns are inadequate (p. 21). The immediate construction of the project does not allow of any baseline data gathering and may discourage sage-grouse from even initiating strutting in the event these decide to reoccupy close lek sites. NREL or Clipper WindPower should commit to monitoring. If leks are active, additional mitigation would be required.

DOE Response to Comment 6

Construction will begin in mid- January 2005, and is expected to last for about 2 months. Construction activities are expected to be completed by the middle of March 2005, which is before the prime breeding season for greater sage-grouse. In addition, seasonal mitigation measures for greater sage-grouse are listed on page 21 of the DEA.

WGFD Comment 7

The provision for only monitoring mortality for only 1 year (p. 21) is grossly inadequate and does not negate the project from obligations under the Migratory Bird Treaty Act and other laws. One year's monitoring may mask actual impacts due to seasonal and annual variation. DOE should require monitoring for at lease three years. Results should be compared to other nearby projects. Mortality monitoring does not address scavenging and decomposition (pp. 64-65).

DOE Response to Comment 7

Clipper Windpower has agreed to conduct surveys of avian use of the immediate project area by raptors and passerine birds along with the mortality surveys discussed in the DEA. The avian use surveys will be based on survey methods and protocols used at the nearby Foote Creek Rim Windpower Project. The Errata to the DEA includes a commitment to these site use surveys.

One year of post-construction mortality surveys will provide some information on the potential impacts of the Proposed Action on bat and/or avian species and further characterize the impacts of this wind turbine.

As discussed under *DOE Response to Comment 2*, Mortality surveys would be conducted in accordance with *Final Report: Avian and Bat Mortality Associated with the Initial Phase of the Foote Creek Rim Windpower Project, Carbon County, Wyoming* (Young et al. 2003); these survey procedures do address issues of scavenging and decomposition. This document can be found at <u>http://www.west-inc.com/wind_reports.php.</u>

WGFD Comment 8

We suggest that the design and characteristics of the proposed low-speed wind turbine be contrasted with other existing designs, including height of rotor-swept area, blade tip speeds, and potential wildlife mortalities. Implications of the differing height of the rotor-swept area from the Clipper design to conventional turbines should be discussed in detail (p. 64).

DOE Response to Comment 8

Design specifications for the Clipper wind turbine are discussed in the DEA on pages 9– 14. Relevant design specifications for the Clipper wind turbine are also compared to conventional wind turbines on pages 63-64 of the DEA. The DEA also presents an analysis that estimates bird and bat mortalities for the Clipper wind turbine compared to the existing wind turbines that are located at the Foote Creek Rim Windpower Project and the Medicine Bow Wind Project. Clipper has also committed to additional monitoring in an attempt to better define relative impacts to wildlife of the larger turbine compared with smaller turbines.

WGFD Comment 9

Individual met towers can cause as much wildlife mortality as working turbines, especially if these are lattice towers with guy wires. We recommend using current met tower by the Platte River Power Authority and other since they are already monitoring wind speeds in the area.

DOE Response to Comment 9

As stated above, Clipper has utilized and incorporated the recommendations stated in the Service Guidance document into the planning phase of this project, wherever possible. DOE and Clipper recognize that tall, guy-wired meteorological towers can result in numerous bat and avian mortalities. However, as stated in the DEA, one of the primary purposes of the proposed research project is international certification of the demonstration wind turbine. These certification standards specify the location and height requirements of meteorological towers relative to turbines being certified. Meteorological data is needed to correlate wind velocities seen by the turbine with the power output generated. This correlation is required to predict the rated power output of the turbine. According to the international standards, meteorological tower height must be within 2% of hub height of the turbine (the hub height will be 75 meters, or 246 feet), and a maximum of 2 to 4 rotor diameters from the turbine, with the accepted practice being 2.5 rotor diameters away from the turbine (about 760 feet in this case). DOE has discussed with Clipper the potential use of the existing meteorological towers associated with the Medicine Bow Wind Project, and Clipper has determined that these towers are too far away from the proposed turbine site and not tall enough to be utilized for the proposed research project. While utilization of an existing meteorological tower would result in significant cost savings, it would not meet the technical data standards that are required for this project. In addition, the tower must be 240 ft tall, and a guyed-lattice tower is the only practical and reasonable method that can be used to erect a tower of that height.

WGFD Comment 10

The assumptions about impacts to Bald Eagles (p.35, p.54) are understated. An active Bald Eagle nest is within 8 miles of the preferred site and is directly in the flight line to East Allen Lake, where waterfowl, fish and other preferred prey occur.

DOE Response to Comment 10

The analysis included in Section 4.4.1.2 does not understate potential impacts to bald eagles (a federally listed and protected species). The document clearly states that migrating bald eagles may occasionally forage or fly though the project area. The DEA also states that there is a chance that bald eagles might collide with the operating wind turbine or meteorological tower and guy wires. When asked for their comments and concerns about wildlife species in the area during the scoping period prior to preparation of the DEA, neither the WGFD nor the USFWS identified the project area as a migratory pathway for bald eagles. There are no data to indicate that the project area is located in a migratory flight path. The Wyoming Natural Diversity Database (coordinated by the University of Wyoming) also does not note any sightings of bald eagles within 6 miles of the project area including the area around East Allen Lake and no bald eagle mortalities have been documented at the Medicine Bow Wind Project. The DEA concludes that the

Proposed Action may affect, but would not adversely affect bald eagles that might utilize the project area.

DOE appreciates WGFD's review of the Proposed Clipper Windpower, Inc. Low Wind Speed Turbine Demonstration Project Environmental Assessment. If you have further questions regarding DOE's response to your comments, please contact Steve Blazek at 303-275-4723. Mr. Blazek will contact you in the near future to coordinate review and comment of the survey protocol documents.

Sincerely,

Em H Heuton

John H. Kersten Manager

Enclosure